AHMED IMTEAJ

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CURRENT POSITION

Assistant Professor (Tenure-track) and I-SENSE Fellow
Department of Electrical Engineering and Computer Science *Fall 2025-Current*
Florida Atlantic University

Director, **S**ecurity, **P**rivacy and Int**E**lligence for **E**dge **D**evices Laboratory (**SPEED Lab**)
Research Lab Website: `https://www.speedlab.network`
Personal Site: `https://sites.google.com/view/imteaj-cs/`

Recipient of:

- **NSF CRII Grant** as sole PI.
- **DHS CINA Collaborative Grant**.
- **ORAU Research Innovation Partnership Grant** as lead PI.

PREVIOUS POSITION

Assistant Professor (Tenure-track), School of Computing *August 2022 - August 2025*
Southern Illinois University Carbondale
Recipient of:

- SIUC **Outstanding Teacher of the Year Award** in 2024.
- Nominated for **Early Career Faculty Excellence Award**, SIUC, 2025.
- Nominated for **Rising Star Faculty Award**, SIUC, 2025.

EDUCATION

Ph.D. in Computer Science *2022*
Knight Foundation School of Computing and Information Sciences
Sustainability, **O**ptimization, and **L**earning for **I**nter**D**ependent networks laboratory (**solid** lab)
College of Engineering and Computing, Florida International University
Ph.D. Advisor: **Dr. M. Hadi Amini**
Ph.D. Dissertation Topic: Distributed Machine Learning Algorithms for Resource-Constrained Heterogeneous Internet-of-Things Environments
Recipient of:

- **2022 FIU Real Triumph Grad Award**
- **2022 Outstanding Student Life Award** (the Graduate Scholar of the Year Award)
- **2021 Best Graduate Student in Research Award**
- **CSCI 2019's Best Paper Award**

M.Sc. in Computer Science *2021*
Knight Foundation School of Computing and Information Sciences, College of Engineering and Computing, Florida International University
Recipient of **Outstanding Master's Degree Graduate Award**

Chittagong University of Engineering and Technology *2011 - 2015*
B.Sc. in Computer Science and Engineering

RESEARCH GRANT AND FUNDING

1. **National Science Foundation (NSF)**
   Role: Sole PI. Amount: $167,500 (Status: **Awarded**).
   Title: Federated Meta-Learning for Cross-Network Crime Analytics in Interdependent Environments.
2. **US Department of Homeland Security (DHS)**
   Role: SIU PI. (Status: **Awarded**).
   Title: Education and Workforce Training for Artificial Intelligence in Criminal Activity Recognition: Computing and Criminology Perspectives.
3. **ORAU Innovation Partnerships Grant**
   Role: PI. (Status: **Awarded**).
   Title: LLM Nexus: Bridging Technical Innovation and Ethical Horizons

4. **National Science Foundation (NSF)**
   Role: PI. Amount: $599,999 (Status: **Pending**)
   Title: RI: Agentic AI-Driven Vision-Language-Action Framework for Disaster Response Operations
5. **National Science Foundation (NSF)**
   Role: Co-PI. Amount: $459,748 (Status: **Pending**)
   Title: REU Site: Leveraging Generative Artificial Intelligence Tools to Advance Engineering and Computing Applications
6. **Department of Defense (DoD)**
   Role: Co-PI. Amount: $1,00,000 (Status: **Pending**)
   Title: AI Compute Infrastructure for Interdisciplinary Research and Education
7. **National Science Foundation (NSF)**
   Title: CDER Summer Training Program (Status: **Awarded**)
8. **US Department of Homeland Security (DHS)**
   Role: Graduate Research Assistant. I actively contributed to drafting this proposal, which is based on my PhD research. Funding Amount: $300,000 (Status: **Awarded**).
   Title: Agent-based Learning to Utilize Local Data for Activity Recognition.

RESEARCH INTERESTS

- **Trustworthy AI** (Large Language Models, Vision-Language Models, Cyberattacks in LLMs and VLMs).
- **Scalable AI** (Federated Learning, Computer Vision, ML, Multi-modality, Deep Learning).
- **Cybersecurity** (Adversarial attack and Robust defense Mechanism, Adversarial attack, Privacy, Trust, Blockchain)
- **Privacy** (Distributed Differential Privacy, Secure Multi-party Computation, Homomorphic Encryption)
- **Internet of Things** (Intelligent Transportation System, Healthcare, Connected Autonomous Vehicles, WSN)
- **Interdependent Networks** (Critical Infrastructure Resilience, Network Dynamics and Behavior.)

HONORS AND RECOGNITION

1. Recipient of **Outstanding Teacher of the Year Award** at Southern Illinois University.
2. **Best Graduate Student Research Award** among around 100 Ph.D. students at the Knight Foundation School of Computing and Information Sciences, Florida International University.
3. **2022 Graduate Scholar of the Year Award** at the Outstanding Students Life Awards Ceremony, Division of Academic and Student Affairs, Florida International University.
4. **The Outstanding Master's Degree Graduate** award among all the engineering and science department at Florida International University.
5. Second place at **Graduate Student Scholarly Forum 2021** for my PhD research work, "Lightweight Federated Learning Framework for Resource-constrained IoT Environment".
6. **Best Paper Award** at 2019 Annual Conference on Computational Science and Computational Intelligence.
7. Listed in Stanford University's prestigious **World's Top 2% Scientist** list, recognizing impactful research contributions in 2023.

HIGHLIGHTS

• Profound knowledge on the state-of-the-art **Large-Language Models, Federated Learning for edge devices, Artificial Intelligence, Machine Learning, Cybersecurity** and **Data Mining**.

• Awarded two federal grants (NSF CRII and DHS CINA) and five pending, in my first two years of academia. Besides, my PhD research is also the fundamental basis of two other research grants from DHS and DoH!

• Developed a new course, **CS491-955: Generative Artificial Intelligence** for SIU CS department, which was offered in Summer'24 and I conducted the course.

• Another new course, **Generative AI: Computing and Ethical Perspectives**, has been approved by the University Honors Program (only approved course from the engineering and computing department) and will be offered in Spring'25.

• More than **seven** years of teaching experience as a faculty member of SoC at SIUC, Secondary Instructor at FIU and Primary Instructor at NSF REU and RET program. Received **Outstanding Teacher of the Year** Award at SIU.
• Our journal paper on Federated Learning for Resource-constrained IoT Devices is ranked 4th among all publications in the IEEE Internet of Things journal!
• Experience in leading and mentoring research teams (**directly mentored more than** 15 **undergraduate and graduate students**) and published peer-reviewed journal and conference papers.

MENTORSHIP EXPERIENCE

PhD Students:

- Md Zarif Hossain (PhD Student)
- Awal Ahmed Fime (PhD Student)

MS Thesis/Project Students (*Twelve MS students have successfully graduated under my supervision*):

- **Dina Famouri**. Research Topic: Human Activity Recognition with Keypoint Analysis.
- **Oleksandr Jockusch**. Research Topic: Federated Meta-Learning for Emotion and Sentiment Aware Multimodal Complaint Identification.
- **Revathi Gajjala**. Research Topic: Physics-Informed Neural Networks.
- **Veerendra Reddy Ayaluri**. Research Topic: Federated Learning Testbed for Mobile Agent.
- **Sai Sandhiptha Bayya**. Research Topic: Ensuring Fairness in Federated Learning for Healthcare Systems
- **Mark Sidhom**. Research Topic: Develop a Fined-tuned LLM for Healthcare.
- **Prince Duo**. Research Topic: Hallucination Attacks and Impacts on Large-Language Models.
- **Venkata Gnana Prakash Paruchuri**. Research Topic: Topic Modelling on Research Articles using BERT.
- **Gireesh Nadh Mekala**. Research Topic: Road Traffic Prediction using Federated Learning.
- **Srivatsa Tangirala**. Research Topic: Poisoning Attack in Federated Learning using GANs.
- **Madhu Nimeshika Dasika.** Research Topic: Skin Cancer Classification using Transfer Learning.
- **Wasimuddin Fathimullah.** Research Topic: Intrusion Detection with Federated Reinforcement Learning.

Undergraduate Students:

- **Nadia D Lafontant**. Research Topic: Resource-efficient Fine-tuning of Vision-Language Models.
- **Ian Tudor**. Research Topic: Drone Swarming, Distributed Streaming and Learning.

NSF—DoD REU Site Mentor NSF Funded Research Experience for Undergraduate Students
Knight Foundation School of Computing and Information Sciences, Florida International University

- **Mentored REU Students:**
  1. Raghad Alabagi (Summer'21), and
  2. Meleik Hyman (Summer'20)
- Mentored two undergraduate students in research formulation, data collection and analysis to help them complete their summer REU program.
- Guided the students in preparation and presentation of their research findings.

NSF—DoD RET Site Mentor Research Experience for Teachers, Supported by NSF
Knight Foundation School of Computing and Information Sciences, Florida International University

- **Mentored RET Participants:**
  1. Marisa Behar and (Summer'21), and
  2. Yoandra Abad (Summer'21)
- Mentored three K-12 STEM teachers to participate in authentic summer research experiences.
- Acted as a bridge to establish a long-term collaborations between Kindergarten-through-12th grade (K-12) STEM teachers and the research community.
- Guided the teachers to translate their research experiences and new scientific knowledge into their classroom activities and curricula.

Undergraduate Senior Project Design/Final Year Project Mentor Spring 2020
Knight Foundation School of Computing and Information Sciences, FIU

- **Mentored Undergraduate Students:**
  1. Glenda Gonzalez (Spring'20), and
  2. Ricardo Boetto (Spring'20)
- Mentored the students to find out research findings and assist them by giving suggestions, directions, and technical supports for developing their project.
- News Coverage: "Students rise against the odds to complete their senior design project on machine learning for robotics" by FIU CEC News **[Link]** and KFSCIS News **[Link]**.

Mentor of FIU Thrive ML Team Fall 2022
A Collaborative Team Science Project of the Green Family Foundation Neighborhood Health Education Learning Program (NeighborhoodHELP) funded by the Florida Department of Health in Miami-Dade

PUBLISHED BOOK

1. **[Springer] Ahmed Imteaj**, M. Hadi Amini, and Panos M. Pardalos, "Foundations of Blockchain: Theory and Applications", Springer, 2021. **[Link][Link]**

SELECTED JOURNAL PUBLICATIONS

1. **[IEEE TAI]** Ervin Moore*, **Ahmed Imteaj***, Md Zarif Hossian, MH Amini, "Blockchain-Empowered Cybersecure Federated Learning for Trustworthy Edge-Computing", accepted in IEEE Transactions on Artificial Intelligence, 2025. [*Authors contributed equally]
2. **[IEEE TAI]** A. R. Shahid and **Ahmed Imteaj**, "Securing User Privacy in Cloud-Based Whiteboard Services Against Health Attribute Inference Attacks," in IEEE Transactions on Artificial Intelligence, vol. 5, no. 8, pp. 3872-3885, Aug. 2024, doi: 10.1109/TAI.2024.3352529
3. **[IEEE TAI]** Md Zarif Hossain, and **Ahmed Imteaj**. "Sim-CLIP: Unsupervised Siamese Adversarial Fine-Tuning for Robust and Semantically-Rich Vision-Language Models." under review in IEEE Transactions on Consumer Electronics, arXiv preprint arXiv:2407.14971 (2024).
4. **[IEEE Consumer Electronics]** Syed Mhamudul Hasan, A. R. Shahid, **Ahmed Imteaj**, "Evaluating Sustainability and Social Costs of Adversarial Training in Machine Learning, IEEE Consumer Electronics Magazine, doi:10.1109/MCE.2024.3458350, 2024. **[Impact Factor: 4.135]**
5. **[IEEE IoT Journal]** Moore, Ervin, **Ahmed Imteaj**, Shabnam Rezapour, and M. Hadi Amini. "A Survey on Secure and Private Federated Learning Using Blockchain: Theory and Application in Resource-constrained Computing." IEEE Internet of Things Journal, (2023). (**Impact Factor: 10.238**)
6. **[IEEE Consumer Electronics] A. Imteaj**, A. R. Shahid and S. Zaman, "Leveraging Blockchain Interoperability for Interdependent Networks," in IEEE Consumer Electronics Magazine, doi: 10.1109/MCE.2023.3245283. [**Impact Factor: 4.135**]
7. **[IEEE IoT Journal] Ahmed Imteaj**, U. Thakker, S. Wang, J. Li and M. H. Amini, "A Survey on Federated Learning for Resource-Constrained IoT Devices," in IEEE Internet of Things Journal, vol. 9, no. 1, pp. 1-24, 1 Jan.1, 2022. [**Listed as 4th most popular journal articles in IEEE Internet of Things Journal in January, 2022**] (**Impact Factor: 10.238**)
8. **[Elsevier] Ahmed Imteaj** and M. Hadi Amini. "Leveraging Asynchronous Federated Learning to Predict Customers Financial Distress." Intelligent Systems with Applications (2022): 200064, Elsevier. (**Impact Factor: 5.81**)
9. **[Springer]** Abdur R. Shahid, Ahmed Imteaj, "Sticks and Stones May Break My Bones, But Words Will Never Hurt Me! — Navigating the Cybersecurity Risks of Generative AI", AI & Society: Knowledge, Culture and Com, Springer, 2024.
10. **[Elsevier]** *M. Hyman, *Calvin Mark, ***Ahmed Imteaj**, Hamed Ghiaie, Shabnam Rezapour, Arif M. Sadri, M. Hadi Amini, "Data Analytics to Evaluate the Impact of Infectious Disease on Economy: Case Study of COVID-19 Pandemic," Patterns Journal (2021). [*Authors contributed equally]
11. **[Sensors] Ahmed Imteaj**, Vahid Akbari, and Mohammad Hadi Amini. 2023. "A Novel Scalable Reconfiguration Model for the Postdisaster Network Connectivity of Resilient Power Distribution Systems" Sensors 23, no. 3: 1200. https://doi.org/10.3390/s23031200 (**Impact factor: 3.9**)
12. **[Electronics] Ahmed Imteaj**, Irfan Khan, Javad Khazaei, M. Hadi Amini, "FedResilience: A Federated Learning Application to Improve Resilience of Resource-Constrained Critical Infrastructures," Electronics 2021, 10(16):1917. (**Impact Factor: 2.9**)
13. **[Frontiers] Ahmed Imteaj** and M. Hadi Amini. "FedPARL: Client Activity and Resource-Oriented Lightweight Federated Learning Model for Resource-Constrained Heterogeneous IoT Environment." Frontiers in Communications and Networks 2 (2021): 10. [**One of the Two Winners of FIU GSAW Scholarly Forum 2021**]
14. **[Elsevier]** M. Hadi Amini, **Ahmed Imteaj**, and Panos Pardalos, "Interdependent Networks: A Data Science Perspective", Patterns Journal (2020).
15. **[Springer] Ahmed Imteaj**, Urmish Thakker, Shiqiang Wang, Jian Li, and M. Hadi Amini. "Federated Learning for Resource-Constrained IoT Devices: Panoramas and State-of-the-art." Federated and Transfer Learning. Adaptation, Learning, and Optimization, vol 27. Springer, Cham.
16. **[SSRE AETiC]** Osman, Afra Binth, Faria Tabassum, Muhammed JA Patwary, Ahmed Imteaj, Touhidul Alam, Mohammad Arif Sobhan Bhuiyan, and Mahdi H. Miraz. "Examining Mental Disorder/Psychological Chaos through Various ML and DL Techniques: A Critical Review." Annals of Emerging Technologies in Computing (AETiC) (2022): 61-71.
17. **[Springer AJSE]** Najat, M.S.M.H., **Ahmed Imteaj**, & Hossain, M.K. A Novel Block Cipher Based on Randomly Shuffled Key Strings. Arabian Journal for Science and Engineering 45, 10975–10987 (2020). (**Impact Factor: 2.9**)

18. **[IJSST]** MK Iqbal, Tanvir Islam, M. Chowdhury, and **Ahmed Imteaj**, *"Construction of Single Axis Automatic Solar Tracking System,"* International Journal of u-and e-Service, Science and Technology 8, no. 1 (2015): 389-400.

SELECTED CONFERENCE PUBLICATIONS

1. **[CVPR]** Md Zarif Hossain, and **Ahmed Imteaj**. "SLADE: Shielding against Dual Exploits in Large Vision-Language Models." IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR), 2025.
2. **[CVPR]** Awal Ahmed Fime, Md Zarif Hossain, Saika Zaman, Abdur R Shahid, **Ahmed Imteaj**. "Towards Trustworthy Autonomous Vehicles with Vision-Language Models Under Targeted and Untargeted Adversarial Attacks". CVPR Workshop on Fair, Data-efficient, and Trusted Computer Vision under IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR), 2025.
3. **[ICCV]** Dina Famouri, Md Zarif Hossain, **Ahmed Imteaj**. "Pose to Protect: Federated Skeleton-Based Anomaly Detection for Privacy-Conscious Video Surveillance". WiCV at IEEE/CVF International Conference on Computer Vision (ICCV), 2025.
4. **[AAAI]** Awal Ahmed Fime, Md Zarif Hossain, Saika Zaman, Abdur R Shahid, **Ahmed Imteaj**. "Benchmarking Large Language Models for Resource-Efficient Medical AI at the Edge". In AAAI 2025 Spring Symposium, 2025.
5. **[ICMLA]** Aniruddha Tiwari, Zhen Ni, **Ahmed Imteaj**. "A New Federated Learning Approach for Imbalanced Medical Image Datasets". In 24th International Conference on Machine Learning and Applications, 2025.
6. **[ICMLA]** Md Zarif Hossain, Abdur R. Shahid, **Ahmed Imteaj**. "Breaking and Securing Vision-Language Models: An Adversarial Robustness Study". In 24th International Conference on Machine Learning and Applications, 2025.
7. **[ICMLA]** Mohd Farhan Israk Soumik, Ebrahim Maghsoudlou Nima, Hussein Zangoti, **Ahmed Imteaj**, Abdur R. Shahid. "Privacy-Preserving Multimodal Stress Detection from Wearables with Attention Fusion and Federated Learning". In 24th International Conference on Machine Learning and Applications, 2025.
8. **[AAAI]** Mohd. Farhan Israk Soumik, W.K.M Mithsara, Abdur Rahman Bin Shahid, Ahmed Imteaj, "Exploring Audio Editing Features as User-Centric Privacy Defenses Against Emotion Inference Attacks", Sixth AAAI-25 Workshop on Privacy-Preserving Artificial Intelligence, AAAI'25.
9. **[IEEE BigData]** Md Zarif Hossain, and **Ahmed Imteaj**. "Securing vision-language models with a robust encoder against jailbreak and adversarial attacks." In 2024 IEEE International Conference on Big Data (BigData), pp. 6250-6259. IEEE, 2024.
10. **[ICMLA] Ahmed Imteaj**, Md Zarif Hossain, Saika Zaman, Abdur R Shahid, "TriplePlay: Personalizing, Balancing and Streamlining Foundation Models for Federated Learning", in proceedings of 23rd IEEE International Conference on Machine Learning and Applications (ICMLA), 2024.
11. **[AAAI] Ahmed Imteaj** and M. Amini. "FedMDP: A Federated Learning Framework to Handle System and Model Heterogeneity in Resource-Constrained Environments." AAAI Conf. Artif. Intell. 2023.
12. **[COMPSAC]** Shahid, Abdur R., Syed Mhamudul Hasan, Malithi Wanniarachchi Kankanamge, Md Zarif Hossain, and **Ahmed Imteaj**. "WatchOverGPT: A Framework for Real-Time Crime Detection and Response Using Wearable Camera and Large Language Model." In 2024 IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC), pp. 2189-2194. IEEE, 2024.
13. **[MobiQuitous]** Abdur Rahman Bin Shahid, Niki Pissinou, Laurent Njilla, Sheila Alemany, **Ahmed Imteaj**, Kia Makki, *"Quantifying Location Privacy in Permissioned Blockchain-Based Internet of Things (IoT),"* in Proceedings of 16th EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MobiQuitous 2019).
14. **[ICDCS]** Md Zarif Hossain, **Ahmed Imteaj**. "FLAMINGO: Federated Learning and Adversarial Meta Training with Consistency Regularization", in proceedings of 2024 44th IEEE International Conference on Distributed Computing Systems, Jersey City, NJ, USA, 2024 pp. 17-22.
15. **[COMPSAC]** Md Zarif Hossain, **Ahmed Imteaj**. "FedAVO: Improving communication efficiency in federated learning with african vultures optimizer." In 2024 IEEE 48th Annual Computers, Software, and Applications Conference (COMPSAC), pp. 455-462. IEEE, 2024.
16. **[INFOCOM]** Abdur R. Shahid, Syed Mhamudul Hasan, **Ahmed Imteaj**, and Shahriar Badsha. "Context-Aware Spatiotemporal Poisoning Attacks on Wearable-Based Activity Recognition." In IEEE Conference on Computer Communications (INFOCOM 2024), IEEE, 2024.

17. **[ICMLA] Ahmed Imteaj**, and M. Hadi Amini, "FedAR: Activity and Resource-Aware Federated Learning Model for Distributed Mobile Robots", in Proceedings of the 19^{th} IEEE International Conference Machine Learning And Applications, 2020, Miami, USA.
18. **[IEEE ICC]** Syed Mhamudul Hasan, Abdur R. Shahid, **Ahmed Imteaj**. "Towards Sustainable SecureML: Quantifying Carbon Footprint of Adversarial Machine Learning", GreenNet, 2024 IEEE International Conference on Communications (ICC'24).
19. **[ACM SenSys] Ahmed Imteaj**, *Distributed machine learning for collaborative mobile robots: PhD forum abstract*, in Proceedings of the 18^{th} Conference on Embedded Networked Sensor Systems (SenSys'20), Association for Computing Machinery, New York, NY, USA, 798–799, 2020.
20. **[COMPSAC]** Saika Zaman, Sajedul Talukder, Ahmed Imtea, Towards Communication-Efficient Federated Learning Through Particle Swarm Optimization and Knowledge Distillation, 48th IEEE International Conference on Computers, Software, and Applications (COMPSAC 2024).
21. **[ICMLA]** Khandaker Mamun Ahmed, **Ahmed Imteaj**, and M. Hadi Amini, "Federated Deep Learning for Heterogeneous Edge Computing", in Proceedings of 20^{th} IEEE International Conference Machine Learning And Applications (ICMLA), 2021, San Diego, USA.
22. **[IEEE SusTech]** O Jockusch, MZ Hossain, A Imteaj, AR Shahid, "Generative AI-based Land Cover Classification via Federated Learning CNNs: Sustainable Insights from UAV Imagery", IEEE Conference on Technologies for Sustainability (SusTech 2024).
23. **[ISCAP]** Mohammad Imran Hossain, Abdur R. Shahid, **Ahmed Imteaj**, "A Diffusion of Innovation-Driven Approach for Strategic Integration of Large Language Models in Education", 2024 Proceedings of the ISCAP Conference, Baltimore, MD, 2024.
24. **[IEEE SusTech]** SM Hasan, AR Shahid, A Imteaj, "The Environmental Price of Intelligence: Evaluating the Social Cost of Carbon in Machine Learning", IEEE Conference on Technologies for Sustainability (SusTech 2024).
25. **[SMARTCOMP]** Shahid, Abdur R., **Ahmed Imteaj**, Shahriar Badsha, and Md Zarif Hossain. "Assessing Wearable Human Activity Recognition Systems Against Data Poisoning Attacks in Differentially-Private Federated Learning." In 2023 IEEE International Conference on Smart Computing, pp. 355-360. IEEE, 2023.
26. **[IEEE DSC]** Md Zarif Hossain, **Ahmed Imteaj**, Saika Zaman, Abdur R. Shahid, Sajedul Talukder, M. Hadi Amini,"FLID: Intrusion Attack and Defense Mechanism for Federated Learning Empowered Connected Autonomous Vehicles (CAVs) Application," 2023 IEEE Conference on Dependable and Secure Computing.
27. **[IEEE SSCI]** Shahid, Abdur R., **Ahmed Imteaj**, Peter Y. Wu, Diane A. Igoche, and Tauhidul Alam. "Label Flipping Data Poisoning Attack Against Wearable Human Activity Recognition System." In 2022 IEEE Symposium Series on Computational Intelligence (SSCI), pp. 908-914. IEEE, 2022.
28. **[Springer IHCI] Ahmed Imteaj**, Raghad Alabagi and M. Hadi Amini, "Exploiting Federated Learning Technique to Recognize Human Activities in Resource-Constrained Environment", in Proceedings of the 13th International Conference on Intelligent Human Computer Interaction (IHCI-2021), 2021, Ohio, USA. [**Received IHCI'21 Student Travel Scholarship Award and FIU GPSC Travel Grant**]
29. **[IEEE CSCI]** M. Hadi Amini, Laurent L. Njilla, **Ahmed Imteaj**, and Calvin Mark, "Distributed Network Optimization for Secure Operation of Interdependent Complex Networks", Annual Conf. on Computational Science & Computational Intelligence (CSCI'21), 2021, Las Vegas, USA. [**Received FIU GPSC Travel Grant, and supported by US Air Force Research Lab**]
30. **[CSCI] Ahmed Imteaj**, M.Hadi Amini, *Distributed Sensing Using Smart End-user Devices: Pathway to Federated Learning for Autonomous IoT*, 2019 IEEE Conference on Computational Science & Computational Intelligence, 2019. **(Best Paper Award)**
31. **[PESGM] Ahmed Imteaj**, M. Hadi Amini, and Javad Mohammadi. "Leveraging decentralized artificial intelligence to enhance resilience of energy networks." In 2020 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5. IEEE, 2020.
32. **[Springer ICAI]** Mohammadi, Farid Ghareh, **Ahmed Imteaj**, M. Hadi Amini, and Hamid R. Arabnia. "Human Motion Recognition Using Zero-Shot Learning." In Advances in Artificial Intelligence and Applied Cognitive Computing, pp. 171-181. Springer, Cham, 2021.
33. **[IEEE SEST]** M. Hadi Amini, **Ahmed Imteaj**, and Javad Mohammadi, "Distributed Machine Learning for Resilient Operation of Electric Systems", in Proceedings of International Conference on Smart Energy Systems and Technologies (SEST)(2020).

34. **[IEEE Asilomar]** Syed Rahman, **Ahmed Imteaj**, Irfan Khan, M. Hadi Amini, "Cascaded Solid State Transformer Structure to Power Fast EV Charging Stations from Medium Voltage Transmission Lines", in Proceedings of the 54th Annual Asilomar Conference on Signals, Systems, and Computers (Asilomar 2020), USA.
35. **[ICO]** Saika Zaman, **Ahmed Imteaj**, Muhammad Kamal Hossen, and Mohammad Shamsul Arefin. "IoT-Enabled Lifelogging Architecture Model to Leverage Healthcare Systems." In International Conference on Intelligent Computing & Optimization, pp. 1011-1025. Springer, Cham, 2020.
36. **[IEEE ICASERT] Ahmed Imteaj**, MAIJ Chowdhury, M Farshid, AR Shahid, *"RoboFI: Autonomous Path Follower Robot for Human Body Detection and Geolocalization for Search and Rescue Missions using Computer Vision and IoT"*, International Conference on Advances in Science, Engineering and Robotics Technology, 2019.
37. **[IEEE ICISET]** SA Rahat, **Ahmed Imteaj**, and Tanveer Rahman, *"An IoT based Interactive Speech Recognizable Robot with Distance control using Raspberry Pi,"* 2018 International Conference on Innovations in Science, Engineering and Technology, pp. 480-485. IEEE, 2018.
38. **[IEEE ICISET]** Afsana Ahmed, Kazi Rifah Noor, **Ahmed Imteaj**, and Tanveer Rahman. *"Unmanned Multiple Railway Gates Controlling and Bi-directional Train Tracking with Alarming System using Principles of IoT,"* International Conference on Innovations in Science, Engineering and Technology, pp. 486-491. IEEE, 2018.
39. **[IEEE ICAEE] Ahmed Imteaj**, Tanveer Rahman, Hosna Ara Begum, and Mohammed Shamsul Alam, *"IoT based energy and gas economic home automation system using Raspberry Pi 3,"* in proceedings of 4th International Conference on Advances in Electrical Engineering (ICAEE), pp. 647-652. IEEE, 2017.
40. **[IEEE ECCE] Ahmed Imteaj**, Tanveer Rahman, Muhammad Kamrul Hossain, Mohammed Shamsul Alam, and Saad Ahmad Rahat, *"An IoT based fire alarming and authentication system for workhouse using Raspberry Pi 3,"* International conference on electrical, computer and communication engineering, pp. 899-904. IEEE, 2017.
41. **[IEEE ICCIT] Ahmed Imteaj**, Tanveer Rahman, Muhammad Kamrul Hossain, and Saika Zaman, *"IoT based autonomous percipient irrigation system using raspberry Pi,"* in proceedings of 19th International Conference on Computer and Information Technology (ICCIT), pp. 563-568. IEEE, 2016.
42. **[MediTec] Ahmed Imteaj**, and Muhammad Kamrul Hossain, *"A smartphone based application to improve the health care system of Bangladesh,"* in proceedings of International Conference on Medical Engineering, Health Informatics and Technology (MediTec), pp. 1-6. IEEE, 2016.
43. **[IEEE ICISET]** Dolon, Lamia Iqbal, Aditi Ghosh, Touhidul Alam, Mohammed Shamsul Alam, Md Khaliluzzaman, **Ahmed Imteaj**, and Mohammad Mahadi Hassan, *"Segmentation analysis on magnetic resonance imaging (MRI) with different clustering techniques: Wavelet and BEMD,"* in proceedings of International Conference on Innovations in Science, Engineering and Technology (ICISET), pp. 1-4. IEEE, 2016.
44. **[IEEE ICEEICT]** Chowdhury, Shayhan Ameen, **Ahmed Imteaj**, Bhaskar Ray, and Muhammad Estiak Omar, *"Depiction of an interactive prevarication system during exigency situation,"* in proceedings of 3rd International Conference on Electrical Engineering and Information Communication Technology, pp. 1-6. IEEE, 2016.
45. **[IEEE ICCIE]** Faiz, Adnan Bin, **Ahmed Imteaj**, and Mahfuzulhoq Chowdhury, *"Smart vehicle accident detection and alarming system using a smartphone,"* in proceedings of International Conference on Computer and Information Engineering (ICCIE), pp. 66-69. IEEE, 2015.
46. **[IEEE ICEEICT]** MH Chowdhury, **Ahmed Imteaj**, Kamrul Hossain Patwary, and Saika Zaman, *"Community Friend: An empirical approach to solve community problems of Bangladesh,"* in proceedings of International Conference on Electrical Engineering and Information Communication Technology, pp. 1-6. IEEE, 2015.
47. **[IEEE ICEEICT] Ahmed Imteaj**, et al., *"Dissipation of waste using dynamic perception and alarming system: A smart city application,"* in proceedings of International Conference on Electrical Engineering and Information Communication Technology, pp. 1-5. IEEE, 2015.
48. **[IEEE ICEEICT] Ahmed Imteaj**, Mahfuzulhoq Chowdhury, and MA Mahamud, *"SmartTravel: An approach to redolant Transportation Guiding Application in context of Bangladesh using OpenStreetMap,"* International Conference on Electrical Engineering and Information Communication Technology, pp. 1-5. IEEE, 2015.
49. **[IEEE IFOST]** Chowdhury, Mahfuzulhoq, **Ahmed Imteaj**, Kamrul Hossain Patwary, and Sulogna Chowdhury, *"Remote phone controller: An application to control smart phone,"* in proceedings of 9th International Forum on Strategic Technology (IFOST), pp. 105-108. IEEE, 2014.

TALKS AND PRESENTATIONS

- **[Southern Illinois]** "Let's Talk Research: NSF Proposal Workshop", Panelist for NSF CRII Proposal, Southern Illinois University, IL, USA, Aug 2024.

- **[UofL]** "Advancements in Robust and Secure AI: From Visual Language Models to Federated Learning Systems", Research Seminar, Department of CSE, University of Louisville, KY, USA, May 2024.
- **[UNLV]** "Advancements in Robust and Secure AI: From Visual Language Models to Federated Learning Systems", Research Seminar, Department of Computer Science, University of Nevada Las Vegas, UNLV, USA, May 2024.
- **[UNF]** "Robust and Efficient Federated Learning for Resource-Constrained Heterogeneous Environments", Research Seminar, Department of Computer Science, University of North Florida, FL, USA, April 2024.
- **[FIU]** *Lightweight Federated Learning Framework for Resource-Constrained IoT Environment*, Florida International University, Miami, FL, USA, 2021.
- **[IHCI]**"Exploiting Federated Learning Technique to Recognize Human Activities in Resource-Constrained Environment", Presented in the 13th International Conference on Intelligent Human Computer Interaction (IHCI-2021), 2021, Ohio, USA.
- **[IEEE CSCI]**"Distributed Network Optimization for Secure Operation of Interdependent Complex Networks", Presented in 8th Annual Conf. on Computational Science & Computational Intelligence, 2021.
- **[IEEE CSCI]** *Distributed sensing using smart end-user devices: pathway to federated learning for autonomous IoT*, 2019 International Conference on Computational Science and Computational Intelligence (CSCI), Las Vegas, NV, USA, 2019.
- **[IEEE PES]** Conducted a webinar on *Distributed Machine Learning for Large-Scale Critical Infrastructure Resilience: Tale of Energy Systems* as an invited speaker in Commemoration of IEEE PES Day 2021.
- **[NSF REU and RET, FIU]** *Leveraging Distributed Machine Learning in Resource-constrained IoT Environment*, NSF supported Research Experience for Teachers (RET) and Research Experience for Undergraduates (REU) programs, Florida International University, Miami, FL, USA, Summer 2021.
- **[ICMLA]** *FedAR: Activity and Resource-Aware Federated Learning Model for Distributed Mobile Robots*, 19th IEEE International Conference on Machine Learning and Applications (ICMLA 2020), Miami, Florida, USA.
- **[ACM SenSys '20]** *Distributed machine learning for collaborative mobile robots*, 18th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys '20), 2020.
- **[IEEE PES]** *Leveraging Decentralized Artificial Intelligence to Enhance Resilience of Energy Networks*, IEEE PES General Meeting, August 2020.
- **[IEEE SEST]** *Distributed Machine Learning for Resilient Operation of Electric Systems*, International Conference on Smart Energy Systems and Technologies (SEST), Istanbul, Turkey, 2020.
- **[INFORMS]** *Efficient Data Analytics For Interdependent Healthcare And Financial Networks: Tale Of Economic Shockwaves Caused By COVID—19*, INFORMS Annual Meeting 2020 session on Modeling Infection Propagation and Designing Surveillance Strategies, 2020.
- **[IEEE ECCE]** *An IoT based fire alarming and authentication system for workhouse using Raspberry Pi 3*, International conference on electrical, computer and communication engineering, Dhaka, Bangladesh, 2017.
- **[IEEE ICCIT]** *IoT based autonomous percipient irrigation system using raspberry Pi*, 19th International Conference on Computer and Information Technology (ICCIT), Dhaka, Bangladesh, 2016.
- **[IEEE ICEEICT]** *Dissipation of waste using dynamic perception and alarming system: A smart city application*, in proceedings of International Conference on Electrical Engineering and Information Communication Technology (ICEEICT), Dhaka, Bangladesh, 2015.
- **[IEEE ICCIE]***Smart vehicle accident detection and alarming system using a smartphone*, International Conference on Computer and Information Engineering (ICCIE), Rajshahi, Bangladesh, 2015.
- **[IEEE ICEEICT]***SmartTravel: An approach to redolant Transportation Guiding Application in context of Bangladesh using OpenStreetMap*, International Conference on Electrical Engineering and Information Communication Technology (ICEEICT), Dhaka, Bangladesh, 2015.
- **[IEEE IFOST]** *Remote phone controller: An application to control smart phone*, 9th International Forum on Strategic Technology (IFOST), Cox Bazar, Bangladesh, 2014.

MEDIA COVERAGE

1. FIU Real Triumph, Ahmed Imteaj. Available at: `https://bit.ly/3lY4ESK`
2. SIU prof gets prestigious National Science Foundation grant to enhance AI crime analysis. Available at: `https://shorturl.at/f90tw`

3. SIU prof explores how to use AI to prevent and fight crime. Available at: https://news.siu.edu/2023/12/120423-siu-prof-explores-how-to-use-ai-to-prevent-and-fight-crime.php
4. "SCIS Researchers from solid lab Received the Best Paper Award at the 2019 IEEE Conference on Computational Science & Computational Intelligence", Reported by KFSCIS, Research and Student Highlight December 13, 2019. Available at: https://bit.ly/3CWGc81
5. The Southern Illinoisan Media: SIU professor gets prestigious grant to enhance AI crime analysishttps://thesouthern.com/news/siu-professor-gets-prestigious-grant-to-enhance-ai-crime-analysis/article_88b4d7ab-3507-588a-863c-e1ce7231a0c9.html
6. The Southern Illinoisan Media: SIU prof explores how to use AI to prevent and fight crime. Available at: https://thesouthern.com/news/local/education/siu-carbondale-professor-artificial-intelligence/article_adba3f3e-92fb-11ee-b904-bb81335ddd06.html
7. "FIU researchers are developing solutions for smart city infrastructures, autonomous vehicles", Reported by Dominique Kent, April 21, 2020. Available at: https://bit.ly/3mZ9kWw
8. "Students rise against the odds to complete their senior design project on machine learning for robotics", Reported by Computing and Information Sciences News, Student Success, May 13, 2020. Available at: https://bit.ly/3D3KQkv
9. "Ahmed Imteaj", Reported by University Graduate School, FIU. Available at: https://gradschool.fiu.edu/ahmed-imteaj/
10. "Computing professor creates dashboard for COVID-19 prediction, visualization", Reported by Diana Hernandez-Alende, May 14, 2020. Available at: https://tinyurl.com/3m3ytfyt

PROFESSIONAL ACTIVITIES

Review Panels

- National Science Foundation (NSF) CRII
- National Science Foundation (NSF) GRFP
- National Aeronautics and Space Administration (NASA)
- US Department of Homeland Security (DHS)

Research Panels

- Panelist, Let's Talk Research (Workshop and panel discussion for early career SIUC faculty on federal funding opportunities)

Academic Service

- Graduate Admission Committee [2022 – Current]
- CS Committee [2022 - Current]
- Faculty Search Committee [2023 - 2024]
- School and College Level Ad Hock Website Committee [2022 – Current]

Dissertation Committee

- Lanqin Sang
- Sai Krishna Kancharla
- Sunder Regmi
- Ismail Hossain
- Sai Mani Teja Puppala
- Bhargav Krishna Thota

MS Thesis/Project Committee

- Mohammed Hassan Ali
- Naga sai Rishik Reddy Vaka
- Satwik Boyina
- Aman Singh Thakur

ORGANIZER (Editorial Board Member and Program Committee Member)

- AAAI-24 Program Committee, The 38th Annual AAAI Conference on Artificial Intelligence, 2024.
- Review Editor, Frontiers in Communications and Networks (June 2020- present).

- Publicity Chair, Combining Physical and Data-Driven Knowledge in Ubiquitous Computing (Ubicomp CPD 2020) **[Link]**
- Technical Program Committee Member, Advanced Machine Learning and Applications: Federated Learning and Meta-Learning (ICMLA AML-IoT FLAME 2021) **[Link]**
- Technical Program Committee Member, International Workshop on Security, Privacy, and Trust for Emergency Events (EmergencyComm 2020) **[Link]**
- Publicity Chair, Advanced Machine Learning and Applications: Federated Learning and Meta-Learning (ICMLA AML-IoT FLAME 2020) **[Link]**
- Technical Program Committee, IEEE CCWC 2024
- Technical Program Committee Member in International Conference on Big Data, IoT and Machine Learning (BIM 2021) **[Link]**
- Technical Program Committee Member, 2nd Workshop on Diversified IoT Applications of Cybersecurity (DIAC '24)
- The 38th International Conference on Advanced Information Networking and Applications (AINA-2024)

Conference/Special Session Reviewer (selected)

- 2024 Conference on Neural Information Processing Systems (NeurIPS'24)
- 38th Annual AAAI Conference on Artificial Intelligence (AAAI'24)
- ACM Tapia Conference
- 2024 IEEE Conference on Technologies for Sustainability (SusTech 2024)
- IEEE World AI IoT Congress 2023 (IEEE AIIoT 2023)
- 20TH IEEE International Conference on Machine Learning and Applications (ICMLA 2021), Pasadena, CA
- ACM international joint conference on pervasive and ubiquitous computing (UbiComp)-CPD 2020
- International Workshop on Federated Learning for User Privacy and Data Confidentiality in Conjunction with ICML 2020 (FL-ICML'21) (June 2020)
- 19TH IEEE International Conference on Machine Learning and Applications (December 2020)
- International Workshop on Security, Privacy, and Trust for Emergency Events (EmergencyComm)
- 21st IEEE International Workshop on Signal Processing Advances in Wireless Communications (IEEE SPAWC)

Journal Reviewer (selected)

- ACM Computing Surveys
- IEEE Transactions on Systems, Man, and Cybernetics: Systems
- Nature Scientific Reports
- Transactions on Mobile Computing
- IEEE Transactions on Neural Networks and Learning Systems
- IEEE/ACM Transactions on Networking
- IEEE Internet of Things Journal
- IEEE Transactions on Computational Social Systems
- IEEE Transactions on Sustainable Computing
- IEEE Transactions on Network Science and Engineering
- Expert Systems With Applications
- Springer Nature Journal
- Frontiers in Communications and Networks
- SN Operations Research Forum Journal
- International Transactions on Electrical Energy Systems
- Computers and Electronics in Agriculture Journal (COMPAG 2020)
- IEEE Access

REFERENCE

Available upon request

Ana Aleksandric

682-847-9236 | aaleksandric@fau.edu | | https://www.linkedin.com/in/ana-aleksandric-64198b21b/ |
https://orcid.org/0009-0008-1436-7889

Professional Summary

Robust background in social computing, data science, and health informatics. Extensive experience in statistical analysis, machine learning, and public health research. Proven ability to teach large classes, conduct independent research, develop data-driven solutions, and collaborate effectively with global teams.

Professional Experience

Division of Research (DoR) Associate Fall 2025 – Present
Florida Atlantic University *Boca Raton, FL*

- Conducting research, performing peer reviews, and mentoring students in research projects.

Assistant Professor of Teaching Jan 2025 – Present
Florida Atlantic University *Boca Raton, FL*

- Teaching graduate and undergraduate courses in the Electrical Engineering and Computer Science Department.
- Academic advisor in the Master of Science with Major in Data Science and Analytics (MSDSA) program.
- Contributing to the department through student support, participation in university events, and promotion of the department at conferences.

Graduate Research Assistant Feb 2021 – Dec 2024
The University of Texas at Arlington *Arlington, TX*

- Conducted research in social computing and public health informatics.
- Applied statistical and machine learning methods to solve complex research problems.
- Authored and co-authored high-impact publications.

Graduate Teaching Assistant Aug. 2020 – Dec. 2020 & May 2023 – Aug 2023
The University of Texas at Arlington *Arlington, TX*

- Assisted in course delivery, graded assignments, and provided support during office hours.

Technology Informatics Guiding Education Reform (TIGER) Intern Sep. 2021 – May 2022
Healthcare Information and Management Systems Society (HIMSS) *Chicago, IL*

- Collaborated on global health informatics projects.
- Assisted in the development of a global health informatics course.
- Conducted literature reviews and wrote white papers on public health interventions.

IT Help Desk Student Assistant Mar. 2019 – May 2020
Texas Wesleyan University *Fort Worth, TX*

- Provided technical support to students, faculty, and staff.

Education

The University of Texas at Arlington Arlington, TX
Ph.D. in Computer Science and Engineering *Aug. 2020 – Dec. 2024*
Advisor: Dr. Shirin Nilizadeh, Co-advisor: Dr. Gabriela Mustata Wilson

Texas Wesleyan University Fort Worth, TX
Bachelor of Science in Computer Science *Aug. 2017 – May 2020*

Teaching Experience

Assistant Professor of Teaching *Florida Atlantic University*
Course instructor for the following courses:

- CAP 6315 Social Network/Big Data Analytics - Graduate-level
  Also offered in the NRT-HDR: A Graduate Traineeship in Data Science Technologies and Applications program, and in the Professional Programs offered by the College of Engineering and Computer Science.
- CAP 4773/5768 Introduction to Data Science - Graduate and undergraduate-level
- COT 4400 Design/Analysis of Algorithms - Undergraduate-level

Graduate Teaching Assistant *The University of Texas at Arlington*
Assisting in the following courses/programs:

- CSE 1310 Introduction to Computers and Programming - Undergraduate-level course - Fall 2020.
- Training and Experiential Learning in Biomedical Informatics (TexBioMed) Summer Institute - Summer 2023.
- Gaining Equity in Training for Public Health Informatics and Technology (GET PHIT) Consortium - Summer 2023.

Technical Skills

Research & Analysis: Statistical Analysis, Machine Learning, Data Mining, Natural Language Processing, Big Data.
Programming Languages: Python, R, C/C++, Java, C#.
Developer Tools: Git, Visual Studio, Eclipse, RStudio, Android Studio, Apache Spark.
Python Libraries: Pandas, NumPy, Matplotlib, Sklearn, Tensorflow, Transformers, NetworkX, PySpark

Publications

- **Aleksandric, A.**, Obasanya, M. J., Melcher, S., Nilizadeh, S., & Mustata Wilson, G. (2022). Your Tweets Matter: How Social Media Sentiments Associate with COVID-19 Vaccination Rates in the US. Online Journal of Public Health Informatics, 14(1). https://doi.org/10.5210/ojphi.v14i1.12419
- **Aleksandric, A.**, Anderson, H. I., Melcher, S., Nilizadeh, S., & Wilson, G. M. (2022). Spanish Facebook posts as an indicator of COVID-19 vaccine hesitancy in Texas. Vaccines, 10(10), 1713. https://doi.org/10.3390/vaccines10101713
- **Aleksandric, A.**, Dangal, A., Nilizadeh, S., & Wilson, G. M. (2024). Facebook Post credibility as a predictor of vaccine hesitancy in the US. In Studies in health technology and informatics. https://doi.org/10.3233/shti231111
- **Aleksandric, A.**, Anderson, H. I., Dangal, A., Wilson, G. M., & Nilizadeh, S. (2023, May 17). Analyzing the stance of Facebook posts on abortion considering state-level health and social compositions. Proceedings of the International AAAI Conference on Web and Social Media, 18(1), 15-28. https://doi.org/10.1609/icwsm.v18i1.31294
- **Aleksandric, A.**, Roy, S. S., Pankaj, H., Wilson, G. M., & Nilizadeh, S. (2024). Users' Behavioral and Emotional Response to Toxicity in Twitter Conversations. Proceedings of the International AAAI Conference on Web and Social Media, 18(1), 29-42. https://doi.org/10.1609/icwsm.v18i1.31295

Pre-prints

- **Aleksandric, A.**, Singhal, M., Groggel, A., & Nilizadeh, S. (2022). Understanding the bystander effect on toxic Twitter conversations. arXiv preprint arXiv:2211.1076
- **Aleksandric, A.**, Dangal, A., Nilizadeh, S., & Wilson, G. M. (2025). Cultural Nuances in COVID-19 Vaccine Uptake: A Comparative Analysis of English and Spanish Facebook Posts in Tarrant County, Texas. JMIR Preprints https://preprints.jmir.org/preprint/72465

Presentations

- Spotlight talks at International AAAI (The Association for the Advancement of Artificial Intelligence) Conference on Web and Social Media (ICWSM) 2024.
- Invited panelist at HIMSS 2024, Learning Analytics and Knowledge Conference (LAK2023), OurCS@DFW 2023 Workshop.
- Research presentations at Texas Health Informatics Alliance Conference (THIA), Student Computing Research Festival (SCRF) (2021-2023), and World Congress on Medical and Health Informatics (MEDINFO 2023).

Awards

- Student Travel Grant for ICWSM 2024.
- Summer Dissertation Fellowship, University of Texas at Arlington, 2024.
- Best PhD Lightning Talk Awards at SCRF (2022, 2023).
- Outstanding Computer Science Graduating Student Award, Texas Wesleyan University, 2020.
- Outstanding Undergraduate Student Award in Computer Science, Texas Wesleyan University, 2019.

Dissertation

- *Ph.D. Thesis:* Understanding Social Dynamics in Toxic Conversations and Public Health Intervention Acceptance on Social Media. https://orcid.org/0009-0008-1436-7889

Professional Service

- Member of HIMSS, American Medical Informatics Association (AMIA), AAAI.
- Reviewer for *Behavioral Science from MDPI*, 2024, and *NIHR*, doi:10.3310/nihropenres.14597.r29940, 2023.
- Sub-reviewer for venues such as Web4Good 2024, ICWSM 2024, CCS 2024, USENIX.

Certifications

ACUE Effective Teaching 101: Starting the Semester Strong – In progress – Fall 2025.
ACUE Creating a Productive Learning Environment – Spring 2025.
Health IT Foundations Tiger VL v3.1 certificate – Spring 2022.

Curriculum Vitae

Behnaz Ghoraani, B.Sc., M.Sc., Ph.D.

Address: 777 Glades Rd
Boca Raton, FL 33431
Phone: 561-297-4031
E-mail: bghoraani@fau.edu
Home page: http://biomedsignal.com

EDUCATION

Postdoctoral Fellow 2010-2012
Faculty of Medicine, University of Toronto, Toronto, Canada
Doctor of Philosophy 2006–2010
Department of Electrical and Computer Engineering, Ryerson University, Toronto, Canada
Master of Applied Science 1998–2000
Department of Electronics and Electrical Engineering, Amir Kabir University of Technology, Tehran, Iran
Bachelor of Applied Science 1994–1998
Department of Electronics and Electrical Engineering, Sharif University of Technology, Tehran, Iran

RESEARCH INTERESTS

Machine Learning, Deep Learning, Pattern classification and recognition, Computer-aided clinical decision making, Biosensor and Biomedical signal analysis, Non-stationary Data Analytics, Feature extraction and classification

PROFESSIONAL AND ACADEMIC EXPERIENCE

Associate Director for Sponsored Projects July 2022-July 2024
Institute for Sensing and Embedded Network Systems Engineering, *Florida Atlantic University*

Co-Director of SMART Health Center, Florida Atlantic University March 2022-present

Computer and Electrical Engineering at Florida Atlantic University July 2020– present
Associate Professor – Tenured

Computer and Electrical Engineering at Florida Atlantic University August 2016– June 2020
Assistant Professor – Tenure track

Institute for Sensing and Embedded Network Systems Engineering August 2016– present
Faculty Fellow

Biomedical Engineering at Rochester Institute of Technology (RIT) August 2012–August 2016
Assistant Professor – Tenure track

INTELLECTUAL PROPERTY

Video-Based Gait Analysis System for Early Detection of Cognitive Impairment, Alzheimer's Disease, and Related Disorders
Invention Disclosure under review, December 2024

Interactive LED-Guided Motor-Cognitive Gait Analysis System for Early Detection of Cognitive Impairment, Alzheimer's Disease, and Related Disorders
Invention Disclosure under review, December 2024

Systems and Methods for Localizing Signal Sources using Multi-Pole Sensors
U.S. Patent No. 10398346
Publication Date: September 3, 2019

Systems and Methods for Guiding a Multi-Pole Sensor Catheter to Locate Cardiac Arrhythmia Sources
U.S. Patent No. 10398338
Publication Date: September 3, 2019

EXTERNALLY FUNDED RESEARCH PROPOSALS

Florida Department of Health 2025-2027
IC-ADRD: Pioneering Home and Clinical ADRD Screening via Smartphone
Role: PI

National Science Foundation (NSF) 2020-2025
CAREER: Advanced data analytics for early detection of Alzheimer's disease using wearables and smartphone
Role: PI

National Science Foundation (NSF) 2020-2021
Modeling Corona Spread and Contact Tracing Using Big Data Analytics
Role: Co-PI

National Science Foundation (NSF) 2019-2022
CCSS: Discovery of Individualized Disease Features for Personalized Health Monitoring
Role: PI

Florida Department of Health 2019-2021
Technology-based Systems to Measure Dual-task (Motor-cognitive) Performance as a Biomarker for Early Detection of Alzheimer's Disease
Role: PI

National Institute of Health (NIH) Heart, Lung, and Blood Institute 2015-2019
Catheter Guidance Algorithm for Identification of Atrial Fibrillation Ablation Targets
Role: PI

National Science Foundation CNS 2020-2022
REU Site: Sensing and Smart Systems
Role: Senior Personnel

National Science Foundation CNS 2017-2019
REU Site: Sensing and Smart Systems
Role: Senior Personnel

SELECTED HONOURS, AWARDS, AND RECOGNITIONS

Engineering Educator of the Year, The Engineers' Council January 2024

Distinguished Researcher of the Year, Research Park at Florida Atlantic University September 2022

Faculty Service and Outreach of the Year Award, Florida Atlantic University, February 2022

Top downloaded publication, Journal of Cardiovascular Electrophysiology Journal, Wiley April 2021

Scholar of the Year Award at Florida Atlantic University, March 2020

National Academy of Innovators award at Florida Atlantic University, September 2019

Graduate Student received NSF travel award May 2019
Awarded for the development of a novel algorithm for automatic assessment of disease severity in patients with Parkinson's disease using wearable sensors

Graduate Student received NSF young professional award August 2016
Awarded for the development of a novel algorithm for automatic detection of medication states of patients with Parkinson's disease using wearable sensors

Graduate Student Selected as an IEEE EMBS Student Paper Competition Finalist July 2016
Awarded for the development of a novel probabilistic algorithm for localization of rotors during atrial fibrillation 15 students were selected as finalists out of 258 nominations and will compete at the IEEE EMBC conference

Kate Gleason College of Engineering 2015 Award Certificate 2015
Awarded by the KGCOE at RIT for Exemplary Performance in Engaging Students in Dissemination.

Kate Gleason College of Engineering 2015 Award Certificate 2015
Awarded by the KGCOE at RIT for Exemplary Performance in Peer-Reviewed Journals.

Graduate Student Received the Gordon K. Moe Young Investigator Award November 2015
Awarded by the Upstate New York Cardiac Electrophysiology Society for the research toward improving atrial fibrillation therapy.

Kate Gleason College of Engineering 2013 Award Certificate 2013
Awarded by the KGCOE at RIT for Exemplary Performance in Externally Disseminated Works.

Senior Member of the Institute of Electrical and Electronics (IEEE) 2012
Elevated by the IEEE for the extensive experience, which reflects professional maturity and documented achievements of significance.

Mitacs Elevate Industrial Fellowship ($65,000 for one year) 2012
Awarded by the Mitacs Inc., Canada.

The G. Gordon M. Sterling Engineering Intern Award 2011
Awarded by the Professional Engineers Ontario, Canada.

Appreciation of the extraordinary service to the IEEE Women in Engineering Society 2011
Awarded by the IEEE Toronto Section.

Ontario Graduate Scholarship in Science and Technology 2007-2010
Awarded by the Natural Sciences and Engineering Research Council of Canada.

Best Teaching Assistant Award 2008-2009
Awarded by the department of Electrical and Computer Engineering, Ryerson University.

Best Teaching Assistant Award 2008-2009
Awarded by the Faculty of Engineering, Architecture and Science, Ryerson University.

Outstanding New Leader Award In appreciation to excellent service 2008-2009
Awarded by the IEEE Toronto Section.

REVIEW DUTIES FOR GOVERNMENT PROPOSALS AND AWARDS

External Grant Reviewer - Hospital-University research in health, France	2023
External Grant Reviewer - The Natural Sciences and Engineering Research Council of Canada	2022–present
External Grant Reviewer - Medical Research Council of UK	2019–present
External Grant Reviewer – Swiss NSF	2019
External Grant Reviewer - French Fourth University Hospital Research Evaluation Committee	2019, 2020
NSF Review Panel	2014–present
National Institute of Health (NIH) Review Panel	2015–present
Committee of the Sheehan's Scholarship for Exceptional Women @ FAU	2017, 2019
Austrian Science Funding Reviewer	2016
AdvanceRIT Faculty Connect Grants Steering and Review Committee	2015–2016
Review Committee, ASEE WIED Mara H. Wasburn Early Engineering Educator Award	2013
TELUS Innovation Award Competition IEEE Canada	2008 and 2009

EDITORIAL DUTIES AND TECHNICAL PROGRAM COMMITTEE (TPC) MEMBER

Associate Editor (AE) of the IEEE Journal of Biomedical and Health Informatics	2023-present
Board of Scientific Counselors (BSC) member of the National Library of Medicine (NLM)	2023-present
IEEE Biomedical Image and Signal Processing Technical Committee Member	2023-present
Guest Editor of the IEEE Signal Processing Magazine	2022-present
Guest Editor " Feature Papers in Advanced Computational Technologies for Biosignal Processing", Bioengineering Sensors	2023-present
Guest Editor " Mathematical Modeling and Analysis in Biomedicine" AMSE	2023-present
Guest Editor "Biological Signal Processing and Analysis for Healthcare Monitoring" Sensors	2022-present
Guest Editor "Advances in Non-Stationary Biomedical Signal Analysis", Frontiers	2021-2022
Guest Editor "Computational Methods for Physiological Signal Processing and Data Analysis," Computational and Mathematical Methods in Medicine	2021-2022
Guest Editor- Sensors – Special Issue "Advanced Machine Learning Techniques for Biomedical Imaging Sensing and Healthcare Applications"	2020-2022
Guest Editor, IEEESMC, "Data Analytics and Computation Intelligence for the Internet of Everything"	2020
IEEE Engineering in Medicine and Biology Society Conference	2020
IEEE SMC BMI Workshop and Brain Hackathon	2020

Associate Editor (AE) of BioMedical Engineering OnLine (BMEO) Journal	2019-present
IEEE Life Sciences Conference, Sydney, Australia (’17) Montreal, Canada (’18)	2017, 2018
IEEE International Symposium on Computer-based Medical Systems (CBMS) Thessaloniki, Greece (’17) Sweden (’18)	2017, 2018
Western New York Image and Signal Processing Workshop	2013–2016
The Healthcare Innovations and Point-of-care Technologies Conference of the IEEE Engineering in Medicine and Biology Society	2014
IEEE Canada International Humanitarian Technology Conference	2014
The 27th Queen's Biennial Symposium on Communications	2014
The International Conference on Information Sciences, Signal Processing and their Application	ISSPA2012
International Conference on Digital Signal Processing	2009 and 2013
IEEE Canadian Conference on Electrical and Computer Engineering	2008 and 2011
The IEEE Toronto Inter Conference Science and Technology for Humanity	2009

REVIEW DUTIES FOR JOURNALS

IEEE Sensors Journal, IEEE Transactions on Signal Processing, IEEE Transactions on Biomedical Engineering, IEEE Biomedical Health and Informatics, Digital Signal Processing, Medical Engineering & Physics, Biomedical Signal Processing and Control, Transactions on Neural Systems & Rehabilitation Engineering, International Journal of Entropy, Cardiovascular Engineering and Technology, Neural Computing and Applications, International Journal of Advancements in Computing Technology, International Journal of PLOS ONE, Journal of Healthcare Engineering, Computers in Biology and Medicine, Numerical Methods in Biomedical Engineering, Journal of Signal, Image and Video Processing, International Journal of Computer Science and System Biology, International Journal of Molecular Sciences, British Journal of Applied Sciences and Technology, EP EuroPace, Computer Methods and Programs in Biomedicine, Computers in Biology and Medicine, Journal of Entropy, The IEEE Transactions on Audio, Speech and Language Processing, The Journal of European Association for Signal Processing (EURASIP), The Elsevier journal on Biomedical Signal Processing and Control, Metabolites (ISSN 2218-1989; CODEN: METALU), The Canadian Journal of Electrical and Computer Engineering (CJECE), MPDI Entropy, MPDI Sensors, MPDI Energies, Knowledge-based Systems, Annals of Biomedical Engineering

PROFESSIONAL AFFILIATION

Senior Member of IEEE Signal Processing Society (SPS)	2006–present
Member of IEEE Women in Engineering	2007–present
Member of IEEE Engineering in Medicine and Biology Society (EMBS)	2008–present

PROFESSIONAL ACTIVITIES

Chair of the IEEE Women in Signal Processing Committee	2023-present
Editor of the IEEE Signal Processing Magazine eNewsletter	2021-present
IEEE Signal Processing Society Strategic Planning Committee- member	2021-present
Associate Editor of the IEEE Signal Processing Magazine eNewsletter	2019-2020

Chair of the IEEE Signal Processing Society Young Professional Committee	2018-2020
Treasurer – IEEE Rochester Signal Processing Chapter	2013–2016
Section Secretary - IEEE Toronto Section	2011-2012
BMES Student Chapter Faculty Advisor	2012–2016
Chair – IEEE Canada Women in Engineering	2010–2012
Chair - IEEE Toronto Women in Engineering	2008–2011
Vice Chair - IEEE Toronto Signal Processing Chapter	2009–2012

INVITED TALKS

Machine Learning in Medicine, University of Toronto	March 2022
Boca Raton Rotary Club	Dec 2021
FAU High School	Nov 2021
IEEE PROmotinG DiveRsity in Signal ProcESSing: PROGRESS	Oct 2020, Sept 2021
FAU's Network for women in STEM	April 2021
IEEE EMBS chapter of Buenaventura and Alberta section	November 2020
Research Café, FAU	October 2020
IEEE Nigeria Young Professionals event	September 2020
University of Toronto	January 2020
Speaker at Research in Action, Boca Raton Public Library	October 2019
University of Pittsburgh	September 2019
FAU Research Showcase	September 2019
BioFlorida Conference, HealthIT Advancements: Going Digital to Improve Healthcare & Treatment	October 2018
Women in Data Science Conference, Biomedical Signal Feature Extraction for Computer-assisted Clinical Decision Making	March 2018
Massachusetts General Hospital, Developing Algorithms to Localize AF ablation Targets	November 2017
FAU College of Nursing, Applying Technology to Research Proposals	November 2017
Florida Atlantic University, Women in Engineering/Computer Science Panel Discussion	November 2017
Life Sciences Career Event, BioFlorida	October 2016
University of Buffalo, Mechanical and Aerospace Seminar	November 2015
University of Rochester, Department of Biomedical Engineering, Rochester, NY	December 2014
Guest Lecture - Computer Audition, University of Rochester, Rochester, NY. November 2014	
University of Wisconsin-Milwaukee, Milwaukee, Wisconsin	September 2014
Xerox, Rochester, NY	May 2013

Rochester IEEE Section Signal Processing Society, Rochester, NY — April 2013

University of Rochester Medical Center, Rochester, NY — January 2013

The American Statistical Association of Rochester Chapter, Rochester, NY — November 2012

The IEEE Canadian Women in Engineering National Conference, Mississauga, Canada — April 2011

The IEEE EMBS Society, University of Ontario Institute of Technology, Oshawa, Canada — February 2010

National Conference on Women in Engineering, Toronto, Canada — November 2009

The IEEE Signal Processing Society, Youngstown, Ohio — November 2009

REFEREED PUBLICATIONS

Journals (underline represents students)

J1) M. Nassajpour, M. Seifallahi, A. Rosenfeld, M.I. Tolea, J.E. Galvin, and B. Ghoraani, "Comparison of Wearable and Depth-Sensing Technologies with Electronic Walkway for Comprehensive Gait Analysis. *Sensors*, *25 (17)*, 2025.

J2) M. Seifallahi, S. Lahiri, J.E. Galvin, and **B. Ghoraani**, "Technology-Enhanced Dual-Task Testing for Alzheimer's Disease and Related Dementias: A Review of Trends, Tools, and Emerging Directions," *Techrxiv*, 2025.

J3) A. Janakiraman, **B. Ghoraani**, "An Empirical Comparison of Text Summarization: A Multi-Dimensional Evaluation of Large Language Models," *arXiv preprint arXiv:2504.04534*, 2025.

J4) T. Barnhardt, J. Chan, **B. Ghoraani**, and T. Wilcox, "Effects of Competition on Left Prefrontal and Temporal Cortex During Conceptual Comparison of Brand-Name Product Pictures: Analysis of fNIRS Using Tensor Decomposition," *Brain Sciences*, 15(2), p. 127, 2025

J5) R. Koszalinski, R. Tappen, **B. Ghoraani**, E. Vieira, B. Furht, D. Newman, M.T. Jan, "Acceptability and Feasibility of Wearable Sensors in an Aging Individual Living Community," *Innovation in Aging*, *8*, p.1014, 2024

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PRESENTATIONS (underline represents presenter)

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P2) M. Shuqair, J. Jimenez-Shahed, **B. Ghoraani**, "Incremental Learning in Time-series Data using Reinforcement Learning," *The IEEE International Conference on Data Mining (ICDM)*, Dec 2022

P3) M. Seifallahi, J. Galvin, **B. Ghoraani**, "Detection of Mild Cognitive Impairment from Quantitative Analysis of Timed Up and Go," *The IEEE International Conference on Data Mining (ICDM)*, Dec 2022

P4) M. Seifallahi, J. Galvin, **B. Ghoraani**, "Detection of Early-stage Alzheimer's Disease using Kinect v.2 Camera and Machine Learning," *BMES 2022 Annual Meeting October*, October 2022

P5) M.D. Hssayeni, J. Jimenez-Shahed, B. Ghoraani, "Dyskinesia Estimation of Imbalanced Data Using a Deep-Learning Model," *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Glasgow, Scotland, Pages: 3195-3198, July 2022.

P6) S. Davidashvilly, M.D. Hssayeni, C. Chi, J. Jimenez-Shahed, B. Ghoraani, "Activity Recognition in Parkinson's Patients from Motion Data Using a CNN Model Trained by Healthy Subjects," *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Glasgow, Scotland, Pages: 3199-3202, July 2022.

P7) Hssayeni, M., Chala, A., Dev, R., Xu, L., Shaw, J., Furht, B., & Ghoraani, B. (2021, October). The Forecast of COVID-19 Spread Risk at The County Level. *In 2021 HPCC Systems Community Virtual Summit*, October 2021.

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P9) M.D. Hssayeni, J. Jimenez-Shahed, M.A. Burack, and B. Ghoraani, "Dyskinesia Severity Estimation in Patients with Parkinson's Disease Using Wearable Sensors and a Deep LSTM Network", *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Montreal, Canada, Pages: 6001-6004, July 2020.

P10) L. N. Boettcher, M.D. Hssayeni, A. Rosenfeld, M. I. Tolea, J. E. Galvin, and B. Ghoraani, "Dual-Task Gait Assessment and Machine Learning for Early-Detection of Cognitive Decline", *International Conference of the IEEE EMBC*, Montreal, Canada, Pages: 3204-3207, July 2020.

P11) M.D. Hssayeni, T. Wilcox, and B. Ghoraani, "Tensor Decomposition of Functional near-infrared spectroscopy (fNIRS) Signals for Pattern Discovery of Cognitive Response in Infants", *International Conference of the IEEE EMBC*, Montreal, Canada, Pages: 394-397, July 2020.

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Research Associate, University of Miami, Coral Gables, FL, March 2011 – July 2014

Teaching

CAP 6776 Information Retrieval
CAP 6640 Natural Language Processing
COP 3813 Introduction to Internet Computing
COP 3540 Introduction to Database Structures
COP 4703 Applied Database Systems

Services

Department Committee of Graduate Advising & Admissions

Program Co-Chair of the 18th International Conference on Machine Learning and Applications (ICMLA 2019); Poster and Demo Chair of 14th IEEE International Conference on Machine Learning and Applications (ICMLA 2015); Program Co-Chair of Web Information Systems and Engineering (WISE 2015); Local Arrangement Chair of IEEE 14th International Conference on Bioinformatics and Bioengineering (BIBE 2014); Registration Chair of The 12th International Society for Music Information Retrieval Conference (ISMIR 2011).

Program committee of AAAI 2019, the International Joint Conference on Artificial Intelligence (IJCAI 2019, 2017), the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2017), the 16th International Conference on Machine Learning and Applications. (ICMLA 2017), IEEE International Conference on Semantic Computing (ICSC 2015), ACM 21st Conference on Information and Knowledge Management (CIKM 2012), Conference on Empirical Methods in Natural Language Processing (EMNLP 2010), the 10th International Conference on Machine Learning and Applications. (ICMLA 2011).

Journal Reviewer for Decision Support Systems, Knowledge and Information Systems, IEEE Transactions on Knowledge and Data Engineering, ACM Transactions on Intelligent Systems and Technology, International Journal of Intelligent Systems Technologies and Applications, International Journal of Machine Learning and Cybernetics, Computational Intelligence, Central European Journal of Computer Science, Theory of Computer Science.

Selected Journal Publications

Sahar Sohangir, Dingding Wang, Anna Pomeranets, Taghi Khoshgoftaar. Deep Learning for Financial Sentiment Analysis. In Journal of Big data, 5(1):3, 2018.

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Feng Liu and Dingding Wang. MVP: Finding the Most Valuable Posts in Financial Social Networks. In Proceedings of IEEE 13th International Conference on Semantic Computing (ICSC 2019), 2019.

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- Cyber-physical systems, wireless networking.
- System design automation, model-driven engineering, software patterns.

Education

- Ph.D. in Computer Science, University of Minnesota, Minneapolis, MN, 2003
  Dissertation: Resource Management in Wireless Networks
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  Project: Architecture Study of NUMA Multiprocessor Systems
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- August 2010 – August 2016, Associate Professor
- August 2004 – August 2010, Assistant Professor

Honeywell Labs, Minneapolis, MN, August 2001 – July 2004, June 1998 – January 2000, Senior Research Scientist

- Principal Investigator and technical lead for the Dynamic Policy Management project, funded ($100K) by the DARPA ATO.
- Modeling and simulation study of VDL Mode 3 aeronautical wireless networks for NASA and FAA. Channel modeling and performance evaluation with Opnet simulations.
- Participated in various DARPA and ONR funded projects as investigator.

CoManage Corporation, Pittsburgh, PA, January 2000- June 2001, Software Development Engineer. Designed and implemented the Network Discovery, Integrity Checks and the Remote Method Call Subsystems of the Integrated Service Manager network management product.

Grants

- Co-PI, Equipment Grant: "Mobile Switching Center, GPRS Support Node, GSM Base Station (1900 MHz) and CDMA Base Station", funded by Tecore Networks, $965,000 01/2012-12/2014
- Co-PI, "Smartphone Cognitive Networking for Rapid Response", funded by the NSF Center for Advanced Knowledge Enablement Industry/University Cooperative Research Center (CAKE I/UCRC) (with Tecore Networks), 2011- 2014, $40,000
- PI, FAU Faculty Seed Research Grant: "Data Link and Communication Protocols for Underwater Laser Sensor Networks", $20,000, 2012-2013
- PI, "PHM Communications Architecture" (Prognosis and Health Monitoring project), funded by the SNMREC, $107,000 during 03/2010 – 12/2013
- Co-PI, "Campus 2020, Indoor Localization," funded by NSF CAKE I/UCRC, Fall 2012-Fall 2013, $12,000
- College of Engineering and Computer Science Faculty Travel Grant to visit Dr. Martin Herman, Chief of the Information Access Division (IAD) at the National Institute of Standards and Technology (NIST), 03/2013.
- Co-PI, "Smart Building Optimization Systems and Algorithms", NSF CAKE I/UCRC, $20,700, 01/2012-08/2012
- PI for "SGER-Efficient Routing in Semi-Deterministic Delay Tolerant Networks", funded by NSF, $50,000, 08/2008 – 07/2010
- PI for "Research for Undergraduates Experience", grant funded by NSF, $15,700, 08/2009 – 08/2010
- PI for the "One Pass to Production", $34,000, funded by Motorola, 01/2008-01/2009. Requirements-driven design automation.

- Investigator for the the federally-funded project “Secure Telecommunications Networks” - Global Grid Simulation, $40,000, 01/2008-01/2009. Develop QoS-aware automated web services composition techniques and simulations for the DoD Global Grid.
- Investigator for “One Pass to Production”, funded by Motorola, $16,000, 2006-2007. Address automated component-based design with UML and domain-specific knowledge management.
- Co-PI for “Collaborative Research: SENSORS: Energy Efficient Communication in Sensor Networks”, funded by NSF, $162,000, 2003-2008
- Co-PI for “CISE Instrumentation: Wireless and Sensor Networking Laboratory”, funded by NSF and the Division of Research at FAU, $85,851, 2004-2007
- Co-PI for “NeTS-NBD: Travel Support for the IEEE MASS 2006 Conference in Vancouver, Canada”, funded by NSF, $15,000, 2006
- PI for “Dynamic Policy Management for Next Generation Communications Systems”, funded by DARPA-ATO, $102,000, 2002-2003, while at Honeywell Labs.

Refereed Publications

U.S. Patents

- U.S. Patent # 7,460,549 awarded on December 2, 2008: Ionut Cardei, Allalaghatta Pavan, Srivatsan Varadarajan, Lee Graba, “Resource Management for Ad Hoc Wireless Networks with Cluster Organizations”
- U.S. patent # 7,274,676 awarded on September 25, 2007: Ionut Cardei, Sabera Kazi, “Burst-mode weighted sender scheduling for ad-hoc wireless medium access control protocols”

Journal Articles

- Ionut Cardei, Caner Mutlu, Mihaela Cardei, “Space-time graph path planner for unsignalized intersection management with a V2V agent coordination architecture”, Theoretical Computer Science, Volume 1020, 2024, 114871, ISSN 0304-3975, https://doi.org/10.1016/j.tcs.2024.114871
- Thapa, Bijayita, Eduardo B. Fernandez, Ionut Cardei, and Maria M. Larrondo-Petrie. 2023. "Abstract Entity Patterns for Sensors and Actuators," Computers 12, no. 5: 93. https://doi.org/10.3390/computers12050093
- R. Papa, I. Cardei and M. Cardei, "Generalized Path Planning for UTM Systems With a Space-Time Graph," in IEEE Open Journal of Intelligent Transportation Systems, vol. 3, pp. 351-368, 2022, doi: 10.1109/OJITS.2022.3171502.
- A. Steinberg, M. Cardei and I. Cardei, "UAS Batch Path Planning With a Space-Time Graph," in IEEE Open Journal of Intelligent Transportation Systems, vol. 2, pp. 60-72, 2021, doi: 10.1109/OJITS.2021.3070415.
- Cardei, Ionut, Borko Furht, and Luis Bradley. "Design and Technologies for Implementing a Smart Educational Building: Case Study." Facta Universitatis, Series: Electronics and Energetics 29, no. 3 (2015): 325-338.

- Fraser R. Dalgleish, Joseph J. Shirron, David Rashkin, Tom E. Giddings, Anni K. Vuorenkoski, Ionut Cardei, Bing Ouyang, Frank M. Caimi and Mihaela Cardei, “A Physical Layer Simulator for Undersea Free Space Laser Communications,” SPIE Optical Engineering Journal 53 (5), 051410 (April 25, 2014); doi: 10.1117/1.OE.53.5.051410
- Marcus, Anthony, Ionut Cardei, Borko Furht, Osman Salem, and Ahmed Mehaoua. “A Mobile Device Prototype Application for the Detection and Prediction of Node Faults in Wireless Sensor Networks”, International Journal of Soft Computing and Software Engineering (JSCSE), ISSN: 2251-7545 & DOI: 10.7321/jscse, Vol. 3, No. 3, pp. 745-752, 2013.
- Ambrose, Arny, Mihaela Cardei, and Ionut Cardei, “HEMS, a Hurricane Evacuation Management System,” Ad Hoc & Sensor Wireless Networks, Old City Publishing, (1-2) pp. 143-167, 2013
- Yuan, Quan, Ionut Cardei, and Jie Wu “An Efficient Prediction-based Routing in Disruption-Tolerant Networks," IEEE Transactions on Parallel and Distributed Systems, Vol. 23, No. 1, 2012, 19-31.
- Marcus, Anthony, Mihaela Cardei, Ionut Cardei, Eduardo Fernandez, Fulvio Frati, and Ernesto Damiani, “A Pattern for Web-based WSN Monitoring,” Journal of Communications, special issue on New Advances in Wireless Sensor Networks, Vol. 6, No. 5, pp. 393-399, Aug. 2011.
- Fonoage, Mihai, Ionut Cardei, and Ravi Shankar, “Mechanisms for Requirements Driven Component Selection and Design Automation,” IEEE Systems Journal, Vol.4, Issue 3, 2010, pp. 396 – 403, doi 10.1109/JSYST.2010.2055030.
- Yuan, Quan, Jie Wu, and Ionut Cardei, "SMRS: A Scalable Multi-Path Routing Scheme," International Journal of Parallel, Emergent and Distributed Systems, Vol. 24, No. 1, February 2009, 69-84.
- Cardei, Ionut, and Mihaela Cardei, “Energy-Efficient Connected Coverage in Wireless Sensor Networks”, Special Issue on Coverage Problems of the International Journal of Sensor Networks, 2008, Vol.3, No.2.
- Cardei, Ionut, Allalaghatta Pavan, and Riccardo Bettati, "Quality of Service guarantees and fault-tolerant TCP services in mobile wireless optical networks," Special Issue on "System Aspects of Wireless Networks" of the International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC), 2008, Vol. 3, No.3 pp. 146 - 158
- Cardei, Ionut, Mihaela Cardei, Lusheng Wang, Baogang Xu, Ding Zhu Du, "Optimal Relay Location for Energy Constrained Wireless Ad-hoc Networks," Journal of Global Optimization, Vol. 36, No. 3, pp. 391-399, Nov. 2006.
- Cardei, Ionut, Srivatsan Varadarajan, Allalaghatta Pavan, Lee Graba, Mihaela Cardei, Manki Min, “Resource Management for Ad-hoc Wireless Networks with Cluster Organization,” The Journal of Cluster Computing in the Internet, Kluwer Academic Publishers, Vol. 7, No. 1, pp. 91-103, Jan. 2004
- Kim, Joonmo, Mihaela Cardei, Ionut Cardei, Xiaohua Jia, “A Polynomial Time Approximation Scheme for the Grade of Service Steiner Minimum Tree Problem”, The Journal of Global Optimization, Vol. 24, No. 4, pp.439-450, December 2002

- Pavan, Allalaghatta, Rakesh Jha, Lee Graba, Saul Cooper, Ionut Cardei, Mihaela Cardei, Vipin Gopal, Sanjay Parthasarathy, and Saad Bedros, “Real-Time Adaptive Resource Management”, IEEE Computer, July 2001.

Conference Papers

- A. Muresan, M. Cardei and I. Cardei, "Exploring Temporal Heterogeneous Graph Deep Learning and Machine Learning Models for Predicting Student Success," 2025 IEEE International Conference on Artificial Intelligence for Learning and Optimization (ICoAILO), Bali, Indonesia, 2025, pp. 338-344, doi: 10.1109/ICoAILO66760.2025.11155968.
- Anca Muresan, Mihaela Cardei, Ionut Cardei, “Student Success Prediction: Harnessing temporal Features and Metapaths via Heterogeneous Graph Models”, the International Conference on Educational Data Mining (EDM), 07/2025, Palermo, Italy
- Caner Mutlu, Ionut Cardei, and Mihaela Cardei, “Space-Time Graph Planner for Unsignalized Intersections with CAVs”, the 16th Annual International Conference on Combinatorial Optimization and Applications (COCOA'23), Honolulu, Hawaii,Dec. 2023, Lecture Notes in Computer Science, vol 14461. Springer, Cham. https://doi.org/10.1007/978-3-031-49611-0_36
- A. Steinberg, M. Cardei and I. Cardei, "UAS Path Planning using a Space-Time Graph," 2020 IEEE International Systems Conference (SysCon), Montreal, QC, Canada, 2020, pp. 1-8, doi: 10.1109/SysCon47679.2020.9275908.
- Papa, R., Cardei, I., Cardei, M. “Energy-Constrained Drone Delivery Scheduling”. In: Wu, W., Zhang, Z. (eds) Combinatorial Optimization and Applications. COCOA 2020. Lecture Notes in Computer Science(), vol 12577. Springer, Cham. https://doi.org/10.1007/978-3-030-64843-5_9
- Ionut Cardei, Davy Pardonner, “Cascading Failure Analysis for Ocean Energy Turbine Generator Arrays”, IEEE International Systems Conference (SysCon), 2019, Orlando, FL.
- Ionut Cardei, Mihaela Cardei, and Rafael Papa, “UAV-enabled Data Gathering in Wireless Sensor Networks”, Proceedings of the IEEE IPCCC Conference, 2018.
- Mihaela Cardei, Ionut Cardei, and Andrew Steinberg, “UAS Trajectory Scheduling System”, IEEE Systems Conference, 2018, Vancouver, Canada
- Ionut Cardei, Borko Furht, Luis Bradley, “Comprehensive Power Analysis in a Leed Platinum-Certified Educational Building”, Proceeding of the 7th International Conference & Workshop REMOO-2017 “Energy For Tomorrow” 10–12 May 2017, Venice, Italy
- Yuan, Quan, Ionut Cardei, Jing Chen, and Jie Wu, “Multi-copy Routing with Trajectory Prediction in Social Delay-Tolerant Networks”, the 2015 IEEE Global Communications Conference Wireless Networks (GLOBECOM 2015), San Diego, CA, USA, December 6-10, 2015
- Rubis, Russ, Ionut Cardei, “The Business Data Object Versioning and Change History Patterns,” the International Conference on Pattern Languages of Programs (PLOP 2015), Pittsburgh, Pennsylvania, USA, 10/23 -10/26 2015

- Rubis, Russ, Ionut Cardei, “The Extended Money Object Pattern”, the International Conference on Pattern Languages of Programs (PLOP 2015), Pittsburgh, Pennsylvania, USA, 10/23 -10/26 2015
- Cardei, Ionut, Yueshi Wu, and James Junco. "Backup Wi-Fi Ad-Hoc Network for Emergency Response in Scenarios with Sporadic Connectivity and Primary Users." the 10th IEEE International Conference on Mobile Ad-hoc and Sensor Networks (MSN), 2014, pp. 66-73.
- Rubis, Russ, Ionut Cardei, “Business Object State Transition Controller.” the International Conference on Pattern Languages of Programs (PLOP 2014), October 2014, Monticello, IL
- Rubis, Russ, Ionut Cardei, “Pattern for fine-grain access-controlled business objects.” the International Conference on Pattern Languages of Programs (PLOP 2014), October 2014, Monticello, IL
- Furht, B., V. Aalo, V. Aalo, A. Agarwal, I. Cardei, M. Cardei, N. Erdol, S. Huang, H. Kalva, T. Khoshgoftaar, I. Mahgoub, O. Marques, M. Petrie, D. Raviv, V. Ungvichian, H. Zhu, “Creating Entrepreneurial University,“ International Conference of Education, Research and Innovation (ICERI 2013), Nov. 2013.
- Cardei, Ionut, Anthony Marcus, and Gabriel Alsenas. "Efficient link management for the wireless communication of an ocean current turbine testbed." the 8th Annual IEEE Systems Conference (SysCon), 2014, pp. 36-41, Ottawa, ON, Canada
- Rubis, Russ, Ionut Cardei, “The Common Business Objects Pattern,” the International Conference on Pattern Languages of Programs (PLOP 2013), October 2013, Monticello, IL
- Rashkin, David, Fraser Dalgleish, Ionut Cardei, Bing Ouyang, Anni Vuorenkoski, and Mihaela Cardei. "Experimental validation of an undersea free space laser network simulator in turbid coastal conditions." In SPIE Defense, Security, and Sensing, pp. 872404-872404. International Society for Optics and Photonics, 2013, http://dx.doi.org/10.1117/12.2019192
- Marcus, Anthony, Ionut Cardei, and Gabriel Alsenas, "Automation of the SHIELD methodology for system hazard analysis and resilient design," the 7th IEEE International Systems Conference (SysCon), pp. 894-901, 04/2013, Orlando, FL, USA
- Cardei, Mihaela, Iana Zankina, Ionut Cardei, and Dan Raviv. “Campus Assistant Application on an Android Platform,” IEEE SoutheastCon 2013, Apr. 2013
- Rashkin, David, Ionut Cardei, Mihaela Cardei, F. Dalgleish, and T. Giddings, "Detector noise model verification for undersea free space optical data links," IEEE Oceans, 2012 , vol., no., pp.1,7, 14-19 Oct. 2012
- Marcus, Anthony, Ionut Cardei, Timur Tavtilov, Gabriel Alsenas, “Resilient System Design for Prognosis and Health Monitoring of an Ocean Power Generator,” the 6th IEEE Systems Conference, Vancouver, Canada, March 2012
- Cardei, Mihaela, Anthony Marcus, Ionut Cardei, and Timur Tavtilov. “Web-based Heterogeneous WSN Integration using Pervasive Communication,” IEEE International Performance Computing and Communications Conference (IPCCC 2011), Nov. 2011.
- Cardei, Mihaela, Eduardo B. Fernandez, Anupama Sahu, and Ionut Cardei. “A Pattern for Sensor Network Architectures,” the Asian Conference on Pattern Languages of Programs (AsianPLoP 2011), 10/2011

- Cardei, Ionut, Ankur Agarwal, Bassem Alhalabi, Timur Tavtilov, Taghi Khoshgoftaar, Pierre-Philippe Beaujean, “Software and Communications Architecture for Prognosis and Health Monitoring of Ocean-based Power Generator,” the 5th IEEE Systems Conference, Montreal, Canada, April 2011
- Ambrose, Arny, Mihaela Cardei, and Ionut Cardei, “Patient-centric Hurricane Evacuation Management System,“ the IEEE International Performance Computing and Communications Conference (IPCCC 2010), Dec. 2010
- Duhaney, Janell, Taghi M. Khoshgoftaar, Ionut Cardei, Bassem Alhalabi, and John C. Sloan, "Applications of Data Fusion in Monitoring Inaccessible Ocean Machinery," Proceedings of the 16th ISSAT International Conference on Reliability and Quality in Design, Washington, D.C., August 5-7, 2010, pp. 318-323.
- Liu, Cong, Jie Wu, and Ionut Cardei, “Message Forwarding in Cyclic MobiSpace:the Multi-copy Case,” the 6th IEEE International Conference on Mobile Ad Hoc and Sensor Systems, (MASS 2009), October 12 - 15, 2009, Macau SAR, China
- Fonoage, Mihai, Ionut Cardei, Ravi Shankar, “Mechanisms for Requirements Driven Component Selection and Design Automation,” the 3rd IEEE Systems Conference, Vancouver, Canada, March 2009
- Yuan, Quan, Ionut Cardei, and Jie Wu, "Predict and Relay: An Efficient Routing in Disruption-Tolerant Networks," the 10th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2009.
- Cardei, Ionut, Cong Liu, Jie Wu, and Quan Yuan, “DTN Routing with Probabilistic Trajectory Prediction,” the International Conference on Wireless Algorithms, Systems and Applications (WASA), Dallas, TX, USA, 10/2008
- Cardei, Ionut, Mihai Fonoage, and Ravi Shankar, “Model Based Requirements Specification and Validation for Component Architectures,” the 2nd IEEE Systems Conference, Montreal, Canada, April 2008
- Cardei, Ionut, Mihai Fonoage, and Ravi Shankar, , “Framework for Requirements-Driven System Design Automation,” the IEEE Systems Conference, Honolulu, Hawaii, April 2007
- Cardei, Ionut, “Energy-Efficient Target Coverage in Heterogeneous Wireless Sensor Networks,” the 3rd IEEE International Conference on Mobile Ad-hoc and Sensor Systems, Vancouver, Canada, Oct. 2006
- Cardei, Mihaela, Mohammad O. Pervaiz, and Ionut Cardei, “Energy-Efficient Range Assignment in Heterogeneous Wireless Sensor Networks,” the International Conference on Wireless and Mobile Communications (ICWMC'06), Jul. 2006
- Cardei, Ionut, Allalaghatta Pavan, and Riccardo Bettati, "Communications Quality of Service for Ad-hoc Mobile Optical Free-Space Networks," IEEE Consumer Communications and Networking Conference, Jan. 2006, Las Vegas, NV
- Cardei, Ionut, Allalaghatta Pavan, and Riccardo Bettati, "Architecture for Delay-Sensitive Communication in Mobile Optical Free-Space Networks," the 2nd IEEE International Conference on Mobile Ad-hoc and Sensor Systems, Washington DC, Nov. 2005

- Cardei, Ionut, "QoS Support for Delay Sensitive Applications in Wireless Networks of UAVs," NSF International Workshop on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless and Peer-to-Peer Networks, Fort Lauderdale, FL, 2004
- Cardei, Ionut, and Sabera Kazi, "MAC layer QoS support for wireless networks of unmanned air vehicles," Proceedings of the 37th Hawaii International Conference on System Sciences (HICSS-37), Kauai, Hawaii, Jan. 2004
- Cardei, Ionut, and Sabera Kazi, "QoS-enabled MAC Protocol For Wireless Networks of Unmanned Air Vehicles," IASTED International Conference on Wireless and Optical Communications (WOC 2003), Banff, Canada
- Cardei, Ionut, Rakesh Jha, Mihaela Cardei, and Allalaghatta Pavan, "Hierarchical Architecture For Real-Time Adaptive Resource Management," The IFIP/ACM International Conference on Distributed Systems Platforms and Open Distributed Processing, April 2000, New York, USA
- Cardei, Mihaela, Ionut Cardei, Rakesh Jha, and Allalaghatta Pavan, "Hierarchical Feedback Adaptation for Real-Time Sensor-based Distributed Applications," the 3rd IEEE International Symposium on Object-oriented Real-time distributed Computing (ISORC), March 2000, Newport Beach, California, USA

Books and Book Chapters

- Quan Yuan, Mihai Fonoage, and Ionut Cardei, "Mechanisms for Automatic Web Service Composition", Book Chapter in "Encyclopedia of Next-Generation Mobile Networks and Ubiquitous Computing," IGI Global, 2010
- I. Cardei, C. Liu and J. Wu, "Routing In Wireless Networks With Intermittent Connectivity", Encyclopedia of Wireless and Mobile Communications, CRC Press, Taylor & Francis Group, in production, 2007
- I. Cardei, "QoS Support for Delay Sensitive Applications in Wireless Networks of UAVs", book chapter in "Handbook of Theoretical and Algorithmic Aspects of Ad Hoc, Sensor, and Peer-to-Peer Networks", CRC Press, 2005
- I. Cardei and D.-Z. Du, "Energy Efficient Wireless Networks", book chapter in "Mobile Computing Handbook", edited by Imad Mahgoub and Mohammad Ilyas, CRC Press, ISBN: 0849319714, pp. 689-706, 2004.
- M. Cardei, I. Cardei, D.-Z. Du: "Energy Efficient Approaches in Wireless Networking", book chapter in "Ad Hoc Wireless Networking", Kluwer Academic Publishers, 2004.
- M. Cardei, I. Cardei, D.-Z. Du (editors): "Resource Management in Wireless Networking", Kluwer Academic Publisher, 2004.

Non-refereed Publications

Technical Reports

- M. Cardei, D. MacCallum, S. Chen, I. Cardei, D.-Z. Du, “Approximation Solutions for the Resource Management Problem Using the General Cover Problem”, TR01-047, Computer Science Department, University of Minnesota

Students Supervised who Graduated

- Suvosree Chatterjee, MS CS, 2023, Network Intrusion Detection and Deep Learning Mechanisms
- Andrew Steinberg, CS PhD (co-advised) 2021, “Path Planning Algorithms for Unmanned Aircraft Systems with a Space-Time Graph”
- Rafael Papa, CS PhD (co-advised) 2021, “Space-Time Graph Path Planning for UAS Traffic Management Systems”
- Russ Rubis, CS PhD, 2017, “Patterns for Enterprise Application Design And Development”
- Anthony Marcus, CS PhD, 2013, “Resilient System Design and Efficient Link Management for the Wireless Communication of an Ocean Current Turbine Testbed”
- Saeid Azandaryani, CS MSc, 2013, “Indoor Localization Using Wi-Fi Fingerprinting”
- Timur Tavtilov, CS MSc, 2011, “Prognosis and Health Monitoring Communications Quality of Service”
- Mihai Fonoage, CS PhD, 2010, “Framework for Requirements-Driven System Design Automation”
- Quan Yuan, CS PhD, 2009, “Probabilistic Prediction-Based Routing in Disruption-Tolerant Networks”
- Cong Liu, CS PhD, 2009 (co-adviser), “Design and Implementation of Efficient Routing Protocols in Delay Tolerant Networks”

Classes Taught at FAU

Undergraduate Classes

- COT 2000 Foundations of Computing
- CNT 4104 Introduction to Data Communications
- CNT 4007 Computer Networks
- CNT 4213 Intro to LAN Technology
- COP 3530 Data Structures and Algorithm Analysis
- COP 4045 Python Programming

- COP 4331 Object Oriented Design and Programming
- COP 4610 Computer Operating Systems
- COT 4400 Design and Analysis of Algorithms
- COT 4935 Senior Seminar
- CET 3350 Applied Data Structures
- CET 4505 Applied Operating Systems
- CET 4589 Internet Computing 2
- CET 4748 Intro To Wide Area Networking Technology
- CET 4915 Capstone Project

Graduate Classes

- COP 5377 Functional Programming with Scala
- CNT 5008 Computer Networks
- CNT 6516 Advanced Computer Networking
- COP 5339 Object Oriented Software Design
- COT 5930 Wireless Sensor Networks
- EEL 6591 Wireless Networks

Industry Classes

- Introduction to the Linux Kernel

Service

College Committees (past 7 years)

- Graduate Programs Committee (Fall 2019 - Fall 2021)
- CP&D Committee (2013-2015, 2018)
- Undergraduate Programs Committee (2013-2018)
- Personnel Committee (Fall 2018- Fall 2020)

Department Committees (past 7 years)

- Graduate Admissions and Advising : MS ITM, MS AI, MS CE, PhD CE (since Fall 2022)
- Graduate Admissions and Advising : MS CS, MS CE, MS DS, MS ITM, MS AI, PhD CS, PhD CE (Fall2019 - Summer 2022)
- Graduate admissions and advising for Study group students, as listed above
- TA/GA Committee (Fall 2013 - Fall 2022)

- Graduate Programs Committee (Fall 2022 - present)
- Faculty Search Committee (Spring 2022 - present)
- Chair of the Personnel Committee (Spring 2017 – Spring 2019)
- Chair of the Undergraduate CE Program Committee (2016-2018)
- Chair of Laboratory/Equipment Committee (2014-2016)
- Chair of the Undergraduate CS Program Committee (2013-2014)
- Chair of the BIET Program Committee (2007-2012)
- Undergraduate Marshall at the FAU Summer 2015 Commencement Ceremony

Professional Service

- TPC member for IEEE SysCon, WASA, IEEE IPCCC, IEEE ICCCN, IEEE RASSA
- reviewer for IEEE Transaction on Mobile Computing, IEEE Transactions on Evolutionary Computation, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Vehicular Technology, ACTA Press, IEEE JPDC, Elsevier Engineering Applications of Artificial Intelligence, IEEE Transactions for Computers, COMNET, Elsevier Journal of Computer Networks, IEEE Transactions for Wireless Communications,

JUAN DAVID YEPES ARANGO

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Professional Summary

Experienced Assistant Professor and researcher with a Ph.D. in Electrical Engineering and 18+ years of industry and academic experience across computer science, AI, and telecommunications. Proven ability to teach, mentor, and lead complex research in vision-based navigation and autonomous systems. Demonstrated success leading large student cohorts, authoring academic publications, and managing cross-functional technical teams. Strong foundation in telecommunications, embedded systems, and AI, with an international background. Conversational in Portuguese, fluent in English and Spanish.

Education

Ph.D., Electrical Engineering
Florida Atlantic University, Boca Raton, FL — Dec 2019 – Aug 2023

MBA, Global Management
University of Phoenix (Online) — Sep 2007 – Aug 2009

M.E., Electrical Engineering
Florida Atlantic University — May 1993 – Dec 1994

B.S., Electrical Engineering
Universidad Pontificia Bolivariana, Medellín, Colombia — Jan 1986 – Dec 1992

Academic Appointments

Assistant Professor of Teaching
Florida Atlantic University
777 Glades Rd., 33431, Boca Raton, FL, USA
08/03/2024 – Present

- Deliver undergraduate and graduate-level instruction in core courses including Foundations of Computing, Python Programming, Data Science and Analytics, and Information Retrieval across in-person and online sections.
- Instructed 327 students in Fall 2024 and 332 students in Spring 2025 while supervising up to 8 teaching assistants per term.
- Standardized exams and lab grading across multiple sections, coordinated weekly instructional staff meetings, and managed all Canvas LMS operations and zyLabs integrations.
- Sponsored three senior design teams focused on applied AI and computer vision projects; two were awarded first place at FAU's Senior Design Showcase.
- Serve on the graduate admissions committee for the MS in Data Science and Analytics (DSAL) program, advising students, reviewing applications, and approving study plans.
- Integrate generative AI tools to create diverse quizzes and validate programming assignments.
- Developed and launched a new Information Retrieval course tailored to business and analytics students.
- Participated in FAU's Learning Assistant Program under QEP, applying its framework to Python instruction.

- Contribute to applied research in computer vision, looming detection, and Machine Learning-based perception using Unity3D simulations, OpenCV, and Apple Vision Framework implementations.
- Papers accepted for presentation at ASEE 2025 and in preparation for IEEE publication.

Technologies, Tools, and Skills:
Python, C++, Swift, Unity3D, OpenCV, Apple Vision, Jetson Nano, Canvas LMS, zyLabs, PyTorch, academic curriculum design, graduate advising, agile methodologies, technical mentoring, AI-assisted assessment tools, transformer-based perception models, public speaking.

Visiting Assistant Professor of Teaching
Florida Atlantic University
777 Glades Rd., 33431, Boca Raton, FL, USA
08/06/2023 – 08/02/2024

- Taught key courses in computer science and data science, including Foundations of Computing, Introduction to Programming in Python, and Introduction to Data Science and Analytics.
- Instructed 574 students in Fall 2023, 648 in Spring 2024, and 256 in Summer 2024, coordinating up to 10 teaching assistants across multiple sections.
- Led weekly TA meetings, standardized lab assignments, and ensured consistent grading through zyLabs and Canvas LMS.
- Mentored undergraduate students on AI-enhanced projects, including Python AI tutors and Discrete Math tutor prototypes.
- Guided two Discrete Math AI tutor teams from Summer to Fall 2024; one earned first place in FAU's senior design competition out of 29 entries.
- Applied generative AI tools to diversify assessments and automate code validation workflows.
- Collaborated on research presented at ASEE and IEEE; two co-authored papers accepted for presentation at ASEE 2025.
- Continued vision-based navigation research with simulation and physical prototypes using Jetson Nano and OpenCV.

Technologies and Tools:
Python, C++, C#, Swift, Unity3D, OpenCV, PyTorch, Jetson Nano, Canvas LMS, zyLabs, AI-generated assessments, academic mentoring, educational research.

Research & Teaching Assistantships

Research and Teaching Assistant
Florida Atlantic University
777 Glades Rd., 33431, Boca Raton, FL, USA
06/01/2020 – 08/01/2023

- Conducted research in 3D motion understanding, optical flow, and looming detection in unstructured environments, supporting autonomous navigation projects.
- Developed simulation environments using Unity3D, Python, and OpenCV to model visual motion cues and test real-time object collision avoidance algorithms.
- Collaborated on research publications accepted to ASEE, IEEE HONET, and VEHITS conferences.
- Developed educational visualizations for calculus and control systems used in classroom instruction and academic papers.
- Supported the instruction of courses such as EEE 4541 and STA 4812, grading assignments, assisting students, and holding review sessions.
- Mentored undergraduate students on independent research in computer vision and AI.

- Awarded **Teaching Assistant of the Year (2022)** by the FAU College of Engineering for excellence in instruction and student support.

Technologies and Tools:
Unity3D, OpenCV, Python, C#, Jetson Nano, Apple Vision Framework, Canvas LMS, PyTorch, HLSL shaders, academic publishing tools, MATLAB, research video motion.

Industry Experience

General Manager (CEO)
Industrias Terrigeno S.A.S.
Carrera 120 N° 39 FG 127, Barrio Altos de San Juan, Medellín, Colombia
02/15/2017 – 09/15/2019

- Led strategic, operational, and financial management of a 15-person industrial equipment manufacturing company specializing in high-temperature furnaces (up to 1500°C) for laboratories, mining, and manufacturing sectors.
- Directed all departments, including sales, engineering, production, administration, and HR, and held a 10% ownership stake.
- Digitally transformed operations by implementing Google Workspace, Loggro (SaaS for accounting), and BlueCaribu CRM with Google Ads for marketing automation and lead tracking.
- Streamlined quotation workflows using Excel macros and developed financial dashboards to monitor KPIs and guide business decisions.
- Designed and launched a new product line of glamping geodesic domes, incorporating CAD workflows using SketchUp and Illustrator for technical documentation and marketing.
- Integrated microcontroller-based electronics into heating systems, using Eagle CAD for PCB design and embedded temperature control (PID-based).
- Coordinated product design improvements using laser/plasma cutting, powder coating, and modern 3D rendering tools (Keyshot).
- Built a new corporate website using Wix and created marketing content, including digital product catalogs and technical datasheets.
- Managed hiring processes through external HR firms and led employee onboarding and continuous improvement initiatives.
- Increased sales volume and gross margin through product line diversification, process modernization, and branding strategies.

Technologies and Tools:
Eagle CAD, SketchUp, Autodesk Inventor, Adobe Illustrator, Keyshot, Excel (dashboards/macros), Google Workspace, Loggro, BlueCaribu CRM, Google Ads, PID control systems, embedded electronics, laser/plasma manufacturing coordination.

Senior Manager, Network Consolidation Engineering – Regional (LATAM)
Level 3 Communications, Inc. (now Cirion Technologies)
Cra. 42 #81 3 Sur, Medellín, Colombia
10/15/2013 – 02/03/2017

- Led the Optical Outside Plant (OSP) and wireless engineering teams responsible for planning and executing fiber optic infrastructure consolidation across Latin American metropolitan and long-haul networks.

- Directed a cross-border team of 9–12 engineers, overseeing $10–13 million annual budgets for fiber builds in Bogotá, Medellín, Quito, Guayaquil, São Paulo, Rio de Janeiro, Buenos Aires, and other key cities.
- Supervised long-haul infrastructure projects, including Medellín–Bogotá–Cali, Cali–Buenaventura, São Paulo–Rio, and Las Toninas–Valparaíso routes.
- Used OSP Insight, AutoCAD, Bentley, ArcGIS, and Google Earth to design, map, and document network infrastructure.
- Implemented project management frameworks based on Project Management PMI principles and ITIL v2 to ensure resilience, efficiency, and accountability.
- Spearheaded fiber consolidation initiatives to eliminate redundancies, improve availability, and reduce operational costs across regional networks.
- Negotiated with suppliers and vendors for fiber, equipment, and deployment services across multiple countries.
- Coordinated with internal Transmission, IP, Infrastructure, and NOC teams to integrate new designs and upgrades with ongoing operations.
- Deployed OTDR-based monitoring tools and in-house diagnostic platforms (e.g., OSP Insight, Cacti) for proactive maintenance and fault analysis.

Technologies and Tools:
OSP Insight, AutoCAD, ArcGIS, Bentley, Google Earth, RF planning software, Cacti monitoring, OTDR systems, Excel for budget tracking, PowerPoint for executive reporting, PMI project methodologies, ITIL v2 operations practices.

Senior Manager, Metro Access Planning – Regional (LATAM)
Level 3 Communications, Inc. (now Cirion Technologies)
Cra. 42 #81 3 Sur, Medellín, Colombia
12/01/2011 – 10/14/2013

- Led the design, budgeting, and deployment of metropolitan access networks using Metro Ethernet (MetroE), fiber, and wireless technologies across Latin America.
- Oversaw the planning and rollout of Ethernet-over-fiber ring architectures in major cities such as Bogotá, Medellín, São Paulo, Rio de Janeiro, Lima, Quito, and Buenos Aires.
- Directed the transition from legacy SDH platforms to modern, scalable MetroE infrastructures using Cisco IOS and Huawei switching solutions.
- Managed capital expenditure planning and presented investment cases to regional executive leadership.
- Provided 3rd-level engineering support to service assurance teams, resolving escalated network issues and chronic failures.
- Coordinated provisioning workflows for new circuit activations using internal service delivery platforms.
- Supervised change implementations during maintenance windows, adhering to ITIL-based Change Management practices.
- Designed and reviewed network diagrams, monitored performance metrics, and maintained accurate inventory through custom visualization tools.
- Supported sales engineering and solution architecture teams with custom client designs and capacity validation.

Technologies and Tools:
Cisco IOS, Huawei Metro Ethernet, Cacti monitoring, custom provisioning systems, SDH/MetroE migration strategies, ITIL v2 (Change/Incident/Problem Management), network topology platforms, project budgeting tools.

Manager, Access Network Operations – Northern and Andean Region
Global Crossing
Cl. 185 #45 03, Centro Comercial Santa Fe, Bogotá, Colombia
07/15/2008 – 12/01/2011

- Managed access network operations across Colombia, Venezuela, Ecuador, and the South Florida node (Miami), overseeing the full lifecycle of network services from planning through implementation and support.
- Directed teams handling transmission, Metro Ethernet, IP/MPLS, and legacy switching (ATM and Frame Relay) platforms, ensuring service reliability and customer satisfaction.
- Supervised provisioning and configuration of customer circuits across access, transmission, and IP domains, ensuring timely and accurate delivery.
- Led technical support for L3 escalations, working with field operations, NOC, and engineering to resolve high-impact incidents and chronic network issues.
- Planned capacity expansions for optical infrastructure and facilitated upgrades to core and metro networks.
- Utilized OSS systems and monitoring platforms to manage inventory, performance, and maintenance workflows.
- Coordinated vendor activities and internal compliance for equipment deployments and technology migrations.
- Standardized documentation and operational procedures across regions to improve process efficiency and network availability.

Technologies and Tools:
Cisco IOS, Huawei SDH/IP/MPLS, Lucent (SDH), Alcatel/Newbridge (ATM/FR), OSS/NMS platforms, ITIL v2 (Incident/Change/Problem Mgmt), provisioning systems, cross-border operations planning.

Network Technologies Manager
Impsat Fiber Networks
Cl. 185 #45 03, Centro Comercial Santa Fe, Bogotá, Colombia
11/05/2005 – 07/15/2008

- Directed the technical operations of all data transmission platforms in Colombia, covering satellite (VSAT), terrestrial wireless, optical, copper, and IP-based infrastructure.
- Managed a specialized team of 23–25 engineers overseeing platform lifecycle, network troubleshooting, vendor coordination, and modernization projects.
- Led network backbone and access-layer management, supporting enterprise clients across multiple service domains.
- Oversaw deployment and performance of wireless systems including microwave (Ericsson, Alcatel), and supported international bandwidth providers (Intelsat, PanAmSat).
- Administered SDH/DWDM optical platforms from Lucent, Nortel, and Huawei, and led the transition toward Metro Ethernet rollouts using Cisco, Juniper, and Huawei.
- Directed upgrades and capacity planning for copper and IP transport systems using ECI, General Datacom, and Extreme Networks equipment.
- Ensured service availability and performance monitoring via SNMP-based and vendor-specific OSS tools.
- Improved SLA compliance through operational coordination and engineering-led problem resolution.
- Implemented best practices in service assurance and multi-platform integration to support business continuity.

Technologies and Tools:
Ericsson/Alcatel microwave, Lucent/Nortel/Huawei SDH/DWDM, ECI, Cisco, Juniper, Extreme Networks, VSAT (Hughes/Gilat), SNMP, OSS/NMS tools, ATM/FR/TDM switching, ITIL v2 practices.

Internetworking Coordinator and Specialist
Impsat Fiber Networks
Cl. 185 #45 03, Centro Comercial Santa Fe, Bogotá, Colombia
04/15/2000 – 11/05/2005

- Led internetworking architecture and support for national backbone services, including legacy and IP-based platforms supporting enterprise-grade connectivity.
- Designed and managed infrastructure supporting Frame Relay, ATM, TDM, and emerging IP/MPLS networks, including BGP routing and IP peering integration.
- Introduced voice over IP infrastructure for new products that were offered to customers.
- Served as the technical lead for escalations and inter-platform troubleshooting across switching and routing domains.
- Supported provisioning and maintenance for data and voice services over leased lines, dial-up, and satellite links across distributed client networks.
- Coordinated new service rollouts and node upgrades, integrating with national and international peering points.
- Maintained operational documentation, managed configuration change control, and ensured SLA compliance for major clients.
- Supervised implementation of VLANs, data trunking, and custom solutions for enterprise customers.
- Collaborated with equipment vendors (Cisco, Alcatel, Nortel, Newbridge) and customer IT teams on solution delivery and optimization.

Technologies and Tools:
Cisco IOS, Nortel, Alcatel, Newbridge (ATM/FR/TDM), IP/MPLS, BGP routing, leased line/dial-up access, SLA-driven service models, customer support escalation protocols, CLI-based configuration tools, OSS provisioning platforms.

Outsourcing Projects Engineer
Impsat Fiber Networks
Cra. 42 #81 3 Sur, Medellín, Colombia
08/03/1998 – 04/15/2000

- Led the operations outsourcing engagement for Impsat's largest enterprise client at the time, Conavi (now Bancolombia), managing a network infrastructure spanning over 400 branches and 1000 ATMs nationwide.
- Coordinated the complete migration of legacy systems to an integrated IP and TDM voice/data network using Cisco routers, leased lines, and satellite (VSAT) links.
- Directed a team of 12 engineers across multiple implementation phases, including provisioning, testing, cutover, and support.
- Provided post-deployment operational support, troubleshooting WAN connectivity issues, and ensuring high network availability across all bank locations.
- Oversaw configuration and maintenance of Frame Relay, TDM circuits, and leased line modems for reliable financial data transmission.
- Developed change control documentation, incident logs, and preventive maintenance schedules to meet SLAs.
- Interfaced with client IT staff to implement new connectivity strategies and improve performance visibility through Excel-based reporting and diagnostics.

Technologies and Tools:
Cisco routers, Frame Relay, TDM circuits, VSAT links, leased line modems, terminal access tools, Excel diagnostics, customer support workflows, SLA compliance practices, team coordination.

Certifications & Technical Skills

Certifications

- CCNA – Cisco Certified Network Associate (2003)
- ITIL v2 – EXIN Certification (2008)
- Diploma in Project Management – Universidad Industrial de Santander (2007)
- PDG – Management Development Program, Aden Business School (2006)

Technical Skills

Programming & Scripting:
Python, C++, C#, Swift, Java, MATLAB
Frameworks & Platforms:
Unity3D, OpenCV, PyTorch, Apple Vision Framework, Xcode, Arduino IDE
Hardware & Prototyping:
Jetson Nano, Raspberry Pi, Arduino, custom PCB (Eagle CAD), PID control
Networking & Telecom:
Cisco IOS, SDH/DWDM, ATM, Frame Relay, MPLS, Metro Ethernet, VSAT, Microwave
Tools & Systems:
Canvas LMS, zyLabs, Google Workspace, MATLAB, AutoCAD, ArcGIS, OnShape, Inventor, SketchUp, Adobe Illustrator, Keyshot, Excel macros, OSS/NMS, SNMP tools
Research Methods:
Optical flow analysis, looming detection, motion simulation, transformer-based perception, HLSL shader programming, AI-enhanced teaching tools
Methodologies:
Agile, ITIL v2, PMI-based project management, project-based learning, SLA-based service delivery
Languages:
Spanish (Native), English (Fluent), Portuguese (Intermediate)

Publications

Peer-Reviewed Publications

1. Gowda, A. V., Raviv, D., & Yepes, J. D. (2025).
   Bridging Theory and Practice: Undergraduate Engagement in Computer Vision and Robotics.
   ASEE Southeast Conference (Accepted, Forthcoming, June 2025).
   Link: https://peer.asee.org/54206
2. Yepes, J. D., & Raviv, D. (2024).
   Toward Better Understanding of the Fundamental Theorem of Calculus.
   ASEE Annual Conference & Exposition 2024.
   Link: https://peer.asee.org/48162
3. Yepes, J. D., & Raviv, D. (2024).
   On Teaching and Learning the Fundamentals of L'Hôpital's Rule in Visual and Intuitive Ways.
   ASEE Annual Conference & Exposition 2024.
   Link: https://peer.asee.org/47809
4. Yepes, J. D., & Raviv, D. (2023).
   Visual Looming from Motion Field and Surface Normals.

Proceedings of the 9th International Conference on Vehicle Technology and Intelligent Transport Systems (VEHITS 2023).
DOI: https://doi.org/10.5220/0011727400003479

5. Raviv, D., & Yepes, J. D. (2023).
Detecting Moving Objects Using a Novel Optical-Flow-Based Range-Independent Invariant.
IEEE HONET 2023: International Conference on Smart Communities.
DOI: https://doi.org/10.1109/HONET59747.2023.10374787
6. Yepes, J. D., & Raviv, D. (2023).
Estimation of Looming from LiDAR.
Proceedings of the 8th International Conference on Vehicle Technology and Intelligent Transport Systems (VEHITS 2022).
DOI: https://doi.org/10.5220/0011115300003191
7. Yepes, J. D., & Raviv, D. (2023).
Invariant-based Mapping of Space During General Motion of an Observer.
arXiv Preprint.
PDF: https://arxiv.org/pdf/2311.11130.pdf
8. Yepes, J. D. (2023).
Collision-Free Navigation in 3D Unstructured Environments Using Visual Looming.
Doctoral Dissertation, Florida Atlantic University.
Link: https://www.proquest.com/dissertations-theses/collision-free-navigation-3d-unstructured/docview/2854803600/se-2
9. Raviv, D., & Yepes, J. D. (2023).
A Visual, Intuitive, and Engaging Approach for Explaining the Concept of Feedback in Control Systems.
ASEE Southeast Section Conference 2023.
Link: https://peer.asee.org/44982
10. Raviv, D., & Yepes, J. D. (2023).
On Teaching and Learning the Concept of Derivative in Visual and Intuitive Ways.
ASEE Southeast Section Conference 2023.
Link: https://peer.asee.org/45030
11. Macri, V. A., Raviv, D., & Yepes, J. D. (2023).
From Equations to Actions: A System-Level Design Research Experience of an Undergraduate Student.
ASEE Southeast Section Conference 2023.
Link: https://peer.asee.org/45012

KWANGSOO YANG

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EDUCATION HISTORY

University of Minnesota	Computer Science	Ph.D.	*2015*
University of Minnesota	Computer Science	M.S.	*2010*
Yonsei University	Electricity Engineering	B.S.	*1998*

EMPLOYMENT HISTORY

Associate Professor	Florida Atlantic University	Boca Raton, FL	*2021–Present*
Assistant Professor	Florida Atlantic University	Boca Raton, FL	*2015–2021*
Software Engineer	LG-CNS	Seoul, Korea	*2001–2008*

PUBLICATIONS

Refereed Journal Articles

15. Seyedeh Gol Ara Ghoreishi, Charles Boateng, Sonia Moshfeghi, Muhammad Tanveer Jan, Joshua Conniff, Kwangsoo Yang, Jinwoo Jang et al. "Quad-tree Based Driver Classification using Deep Learning for Mild Cognitive Impairment Detection." IEEE Access (2025).

14. Omar Gonzales, Kwangsoo Yang, and Shihong Huang. "Contextual Sequence-Based User Behavior Anomaly Detection." IEEE Access (2025).

13. Kelley Jackson, Ruth Tappen, David Newman, Jinwoo Jang, Borko Furht, KwangSoo Yang, Mónica Rosselli, and Michelle Villar. "Older driver reports of experience with sensors in vehicles to record driving behavior." Innovation in Aging 8, no. Suppl 1 (2024): 899.

12. Ruth Tappen, Robin Jarvis-Powers, David Newman, Mónica Rosselli, Joshua Conniff, KwangSoo Yang, Jinwoo Jang, and Ashlee Li. "The IDA (Interference with daily activities) scale: a new measure of function in mild cognitive imparment." Innovation in Aging 8, no. Suppl 1 (2024): 924.

11. Charles Boateng, Seyedeh Gol Ara Ghoreishi, Kwangsoo Yang, Muhammad Tanveer Jan, Ruth Tappen, Jinwoo Jang, David Newman et al. "Spatial Deep Learning Approach to Older Driver Classification." IEEE Access (2024).

10. Marie Adonis-Rizzo, Ruth M. Tappen, Monica Rosselli, David Newman, Joshua Conniff, Jinwoo Jang, KwangSoo Yang, and Borko Furht. "Cultural Effects on the Performance of Older Haitian Immigrants on Timed Cognitive Tests." Medical research archives 12, no. 11 (2024): 5868.

9. Sonia Moshfeghi, Jinwoo Jang, Muhammad Tanveer Jan, Seyedeh Gol Ara Ghoreishi, Borko Furht, Kwangsoo Yang, Ruth Tappen, David Newman, Joshua Conniff, and Monica Rosselli. "In-Vehicle Sensing Platform for the Inference of Older Drivers' Mild Cognitive Condition." In World Congress in Computer Science, Computer Engineering and Applied Computing, pp. 37-51. Cham: Springer Nature Switzerland, 2024.

8. Muhammad Tanveer Jan, Borko Furht, Sonia Moshfeghi, Jinwoo Jang, Seyedeh Gol Ara Ghoreishi, Charles Boateng, Kwangsoo Yang et al. "Enhancing road safety: In-vehicle sensor analysis of cognitive impairment in older drivers." Multimedia Tools and Applications (2024): 1-22.

7. Ruth Tappen, Jinwoo Jang, Sonia Moshfeghi, Kwangsoo Yang, Monica Rosselli, Joshua Coniff, Borko Furht, and David Newman. "In-vehicle sensors to detect changes in driving behaviors with emergence of mci." Innovation in Aging 7, no. Suppl 1 (2023): 64

6. Kwang Woo Nam and Kwangsoo Yang. "RealROI: Discovering real regions of interest from geo-tagged photos." IEEE Access 10 (2022): 83489-83497.

5. Young Gu Her, and Kwangsoo Yang. "Parallelization of a two-dimensional time-area runoff routing scheme for efficient overland flow modeling." Frontiers in Hydrology 2022 (2022): 148-04

4. Younggu Her, Kwangsoo Yang, and Jung-Hun Song. "Parallelization of a two-dimensional time-area watershed routing." Environmental Modelling and Software 146 (2021): 105222.

3. Herschelman Roxana, Ahmad Qutbuddin, Kwangsoo Yang, "Conflict-free evacuation route planning.", GeoInformatica 25, no. 4 (2021): 655-678.

2. Ahmad Qutbuddin, Kwangsoo Yang, "Multiple Resource Network Voronoi Diagram", Qutbuddin, Ahmad, and KwangSoo Yang. "Multiple resource network voronoi diagram." IEEE Transactions on Knowledge and Data Engineering 35, no. 2 (2021): 1857-1871.

1. KwangSoo Yang, Kwang Woo Nam, Ahmad Qutbuddin, Aaron Reich, Valmer Talis Huhn, "Size Constrained k Simple Polygons", GeoInformatica 25 (2021): 43-67.

Refereed Conference Proceedings

8. Omar Gonzales, Shihong Huang, and KwangSoo Yang. "Towards More Effective Insider Threat Countermeasures: A Survey of Approaches for Addressing Challenges and Limitations." In 2024 IEEE International Systems Conference (SysCon), pp. 1-8. IEEE, 2024.

7. Ruth Tappen, David Newman, Monica Rosselli, Jinwoo Jang, Borko Furht, KwangSoo Yang, Seyedeh Gol Ara Ghoreishi et al. "Study protocol for In-vehicle sensors to detect changes in cognition of older drivers." BMC geriatrics 23, no. 1 (2023): 854.

6. Charles Boateng, Kwangsoo Yang, Seyedeh Gol Ara Ghoreishi, Jinwoo Jang, Muhammad Tanveer Jan, Joshua Conniff, Borko Furht et al. "Abnormal driving detection using gps data." In 2023 IEEE 20th International Conference on Smart Communities: Improving Quality of Life using AI, Robotics and IoT (HONET), pp. 1-6. IEEE, 2023.

5. Amogh Allani, and KwangSoo Yang. "Turn Constrained Shortest Path." In 2023 IEEE 20th International Conference on Smart Communities: Improving Quality of Life using AI, Robotics and IoT (HONET), pp. 1-6. IEEE, 2023

4. Seyedeh Gol Ara Ghoreishi, Sonia Moshfeghi, Muhammad Tanveer Jan, Joshua Conniff, KwangSoo Yang, Jinwoo Jang, Borko Furht et al. "Anomalous behavior detection in trajectory data of older drivers." In 2023 IEEE 20th International Conference on Smart Communities: Improving Quality of Life using AI, Robotics and IoT (HONET), pp. 146-151. IEEE, 2023.

3. Sonia Moshfeghi, Muhammad Tanveer Jan, Joshua Conniff, Seyedeh Gol Ara Ghoreishi, Jinwoo Jang, Borko Furht, Kwangsoo Yang et al. "In-vehicle sensing and data analysis for older drivers with mild cognitive impairment." In 2023 IEEE 20th International Conference on Smart Communities: Improving Quality of Life using AI, Robotics and IoT (HONET), pp. 140-145. IEEE, 2023.

2. Muhammad Tanveer Jan, Sonia Moshfeghi, Joshua William Conniff, Jinwoo Jang, Kwangsoo Yang, Jiannan Zhai, Monica Rosselli, David Newman, Ruth Tappen, and Borko Furht. "Methods and tools for monitoring driver's behavior." In 2022 International Conference on Computational Science and Computational Intelligence (CSCI), pp. 1269-1273. IEEE, 2022

1. Muhammad Tanveer Jan, Ali Hashemi, Jinwoo Jang, Kwangsoo Yang, Jiannan Zhai, David Newman, Ruth Tappen, and Borko Furht. "Non-intrusive drowsiness detection techniques and their application in detecting early dementia in older drivers." In Proceedings of the Future Technologies Conference, pp. 776-796. Springer International Publishing, 2022.

GRANT AWARDS

External Grants From Federal/State Agencies

· In-Vehicle Sensors to Detect Cognitive Change in Older Drivers, Co-PI: KwangSoo Yang with Ruth Tappen, ($6,130,807), Sep. 2020 - Apr. 2025, National Institutes of Health (NIH)

· OAC CAREER: Spatial Network Database approach for Emergency Management Information Systems ($ 500,011); Mar. 2019 - Aug. 2025, National Science Foundation (NSF)

Internal Grants

· OURI Undergraduate Research Grant: Identifying k Hot Routes on Time Expanded Graph ($600); 2022, Florida Atlantic University

COURSES TAUGHT AT FAU

Graduate Courses:

· Spring 2025: COP 6731 Theory and Implementation of Database Systems

· Fall 2024: COP 6731 Theory and Implementation of Database Systems

· Spring 2024: COP 6731 Theory and Implementation of Database Systems

· Fall 2023: COP 6731 Theory and Implementation of Database Systems

· Spring 2023: COP 6731 Theory and Implementation of Database Systems

· Spring 2022: COP 6731 Theory and Implementation of Database Systems

· Spring 2021: COP 6731 Theory and Implementation of Database Systems

Undergraduate Courses:

· Spring 2025: EGN 4952 Engineering Design 2

· Fall 2024: EGN 4950 Engineering Design 1

· Fall 2023: EGN 4950 Engineering Design 1

· Spring 2023: COP 3540 Introduction to Database Structures

· Fall 2022: COP 3540 Introduction to Database Structures

· Spring 2022: COP 3540 Intro to Database Structures

· Fall 2021: COP 3540 Intro to Database Structures

Supervision of Ph.D Students (6):

· Jhansi Xavier (Ph.D) (2025 - Present): Expected to the Ph.D. dissertation proposal in Fall 2026.

· Joseph Kannookaden (Ph.D) (2025 - Present): Expected to the Ph.D. dissertation proposal in Fall 2026.

· Praveen Borra (Ph.D) (2022 - Present:) Expected to the Ph.D. dissertation proposal in Fall 2025.

· Seyedeh Gol Ara Ghoreish (Ph.D) (2022 - Present): Expected to the Ph.D. dissertation proposal in Fall 2025.

· Omar Gonzales (Ph.D): "Contextual and Latent Deep Learning Approach to User Behavior Anomaly Detection" (2025)

· Ahmad Qutbuddin (Ph.D) : Title: "Spatial Network Big Database Approach to Resource Allocation Problems" (2021)

Supervision of M.S. Students (2):

· Valentin Nechita (Master) (2022 - Present): Expected to the Ph.D. thesis proposal in Fall 2025.

· Charles Boateng (Master): Title "Spatial Deep Learning Approach to Older Driver Classification" (2024)

Supervision of Undergraduate Students (2):

· Taher Kheda (2024 - Present)

· Amogh Allani: Research Paper "Turn Constrained Shortest Path." In 2023 IEEE 20th International Conference on Smart Communities: Improving Quality of Life using AI, Robotics and IoT (HONET), pp. 1-6. IEEE, 2023

SERVICE AND PROFESSIONAL DEVELOPMENT

Department/School service

· Undergraduate Programs Committee (GPC): 2021-Present

· Proctoring the QE exam (2021-Present)

· Ph.D. Dissertation/M.S. Thesis Committee

· Poster Judge (2022)

Professional Activities

· Editorial Board Member of Korea Spatial Information Society

· Refereed for numerous journals, including IEEE Trans. on Knowledge and Data Engineering, International Journal on Advances of Computer Science for Geographic Information Systems, IEEE Intelligent Systems, ACM Trans. on Spatial Algorithms and Systems, ACM Trans. on Spatial Algorithms and Systems, IEEE Trans. on Intelligent Transportation Systems, Journal of AI and Data Mining, ISPRS International Journal of Geo-Information (MDPI), Applied Sciences (MDPI).

· Refereed for numerous conferences, including ACM SIGSPATIAL, FEED Workshop KDD, IEEE International Conference on Vehicular Electronics and Safety, GEOProcessing, GraphSM.

Mehrdad Nojoumian, PhD
Associate Professor of Computer Science
Director of the Privacy, Security, and Trust in Autonomy Lab
Department of Electrical Engineering and Computer Science
Florida Atlantic University
mnojoumian@fau.edu
https://faculty.eng.fau.edu/nojoumian/

Research Interests

Autonomy: Human-autonomy interaction; human-autonomy teaming; VR in autonomy; human factors.

Trust: Human trust in autonomous systems; trust in AI; trust sustainability and repair; trustworthy AI.

Security: Security in autonomy; game theory in security; cyber deception; cryptocurrency; blockchain.

Privacy: Privacy-preserving AI; privacy-preserving decision making; privacy-preserving mechanisms.

Employment

- Associate Professor, Department of EECS, Florida Atlantic University 2020-now
- Assistant Professor, Department of EECS, Florida Atlantic University 2015-2019
  - Summer Faculty Fellowship Program (SFFP), Air Force Research Lab, Sum'18
  - Visiting Faculty Research Program (VFRP), Air Force Research Lab, Sum'17
- Assistant Professor, Department of CS, Southern Illinois University Carbondale 2012-2014

Education

- **PhD** in Computer Science 2007-2012
  Cheriton School of Computer Science, University of Waterloo, Canada
  Supervisor: Professor Douglas R. Stinson
  - Visiting Scholar, Cryptology Group, CWI, Netherlands, Nov-Dec'11
  - Visiting Scholar, CIMS, New York University, USA, Feb-Apr'11
- **MSc** in Computer Science 2005-2007
  School of Electrical Engineering and Computer Science, University of Ottawa, Canada
  Supervisor: Professor Timothy C. Lethbridge
- **BSc** in Computer Engineering - Software 1998-2002
  Department of Software Engineering, IAU, IR

Research Funding

Awarded: External

- Department of Defense: ARL-AFOSR: **$300,135** (Sole-PI), 2018-2022
  New Reputation-Based Mining Paradigm: Incentivizing Blockchain Miners to Avoid Dishonest Mining Strategies
- National Science Foundation: Joint with UCF, GMU: **$482,000** (Co-PI), 2018-2023
  SaTC: CORE: Medium: Collaborative: Countermeasures against Side-Channels Attack Targeting Hardware and Embedded System Implementations of PQC Algorithms
- National Science Foundation - MRI: **$652,850** (Senior Personnel), 2018-2021
  MRI: Acquisition of Artificial Intelligence and Deep Learning Training and Research Lab

- Air Force Research Lab, Summer Faculty Fellowship Program (SFFP): **$16,230** (Sole-PI), Sum'18
  New Techniques for Fast Implementation of Secure Multiparty Protocols
- Dominode LLC through NSF CAKE I/UCRC: **$25,000** (Sole-PI), 2017-2018
  Incentivizing Dominode's Members to Share and Verify Data in a Blockchain Platform
- Air Force Research Lab, Visiting Faculty Research Program (VFRP): **$15,560** (Sole-PI), Sum'17
  Security Games for the Proof-of-Work Computation in Blockchain
- Florida Center for Cybersecurity: Joint with FIU: **$50,000** (Co-PI: 40%), 2016-2017
  Towards Software Defined Networking Enabled Cyber Resilience

Awarded: Internal

- CARES Funds, COECS: **$21,862** (PI), 2021-2022
  Should Self-Driving Cars Mimic Human-Driving Behavior?
- NSF I/UCRC CAKE Project: Joint with Dr. Furht: **$37,737** (Co-PI: %33.4), 2020-2021
  RED: Innovative Video and Image Techniques and Their Applications
- COECS/I-SENSE Seed Fund: Joint with Dr. Zhu and Dr. Bou-Harb: **$25,000** (PI), 2019-2020
  Privacy-Preserving Protocols for Big Data Analytics
- I-SENSE Internal Seed Grant: Joint with Dr. Pados: **$25,570** (PI), 2018-2019
  Human Aspects of Autonomous Driving
- Faculty Seed Grant, SIU: **$19,402** (Sole-PI), 2013-2014
  Novel Mathematical Trust Modeling Based on Human Brain Behavior

Awarded: Independent Contractor

- Air Force Research Lab: **$45,000** (Sole-PI), 2018-2019
  Private Planning & Coordination Among Drones Equipped with Resource-Constrained Devices

Awarded: Undergraduate Research

- Three OURI Undergraduate Research Grants, FAU: **$600, $1,200, $600,** 2017-2022
  With Aman Shaan, Ahsan Sanaullah, and Luiza Menezes
- Faculty Professional Development Funds, FAU: **$1,000**, 2018,2019
  Office of Undergraduate Research and Inquiry
- Undergraduate Assistantship Grant, SIU: **$3,600**, 2013-2014
  Data Collection for Trust Modeling Based on Social Behavior Observation

Honors/Awards

- Excellence and Innovation in UG Teaching Award: FAU Office of the Provost, Apr 2023
- Faculty Service and Outreach Award: FAU College of Eng. and Computer Science, Feb 2023
- Senior Faculty Teaching Award: FAU College of Eng. and Computer Science, Feb 2023
- Inducted into the FAU Chapter of the National Academy of Inventors (NAI), Nov 2022
- Distinguished Mentor of the Year Finalist, FAU Office of UG Research and Inquiry, Apr 2022
- Best Paper Award, Conf. on HCI in Mobility, Transport and Automotive Systems, Jul 2021
- Best Paper Award, Future of Information and Communication Conference, Mar 2020
- Excellence in Teaching Award, FAU College of Eng. and Computer Science, Feb 2020
- Best Paper Award, 31st Florida Conference on Recent Advances in Robotics, May 2018

- Summer Faculty Fellowship Program Award, Air Force Research Lab, USA, Sum 2018
- Visiting Faculty Research Program Award, Air Force Research Lab, USA, Sum 2017
- NSERC Alexander Graham Bell Canada Graduate Scholarship: $70,000, 2009-2011
- Cheriton Graduate Scholarship, School of CS at UW: $33,333, 2008-2012
- President's Graduate Scholarship, UW and Faculty of Math: $30,000, 2009-2012
- Ontario Graduate Scholarship, Ministry of Training, Canada: $15,000, 2011-2012
- NSERC Canada Graduate Scholarship MSFSS Award: $6,000, 2011-2011
- Graduate Entrance Scholarship, UW Cheriton School of Computer Science: $4,000, 2007-2008
- Best Paper in ICETE: 3rd International Conf. on E-business and Telecom Networks, Aug 2006

Patents: Autonomous Vehicles and Robotics

Issued Patents (Sole-Inventor)

1. **Nojoumian M.**, Active Occupant Status and Vehicle Operational Status Warning System and Methods, *United States Patent and Trademark Office*, Patent # US 12,240,376 B2, Granted 03/04/2025.
2. **Nojoumian M.**, Adaptive Driving Mode in Semi or Fully Autonomous Vehicles, *United States Patent and Trademark Office*, Patent # US 11,221,623 B2, Granted 01/11/2022.
3. **Nojoumian M.**, Adaptive Mood Control in Semi or Fully Autonomous Vehicles, *United States Patent and Trademark Office*, Patent # US 10,981,563 B2, Granted 04/20/2021.

Pending Patents

4. **Nojoumian M.**, Adaptive Speed-Limit Measurement (ASM) Based on the Traffic Flow in Semi or Fully Autonomous Vehicles, *USPTO*, Utility Patent # 19/173,196, Filed on 04/08/2025.
5. **Nojoumian M.**, Safety Self Talks (SST) by Large Language Models in Semi or Fully Autonomous Vehicles, *USPTO*, Provisional Patent # 63/747,463, Filed on 01/21/ 2025.
6. **Nojoumian M.** and Skaug L., Road-Risk Awareness System (RAS) in Semi or Fully Autonomous Vehicles, *USPTO*, Utility Patent # 19/016,485, Filed on 01/10/2025.
7. **Nojoumian M.** and Skaug L., Sun Glare Avoidance System (SAS) in Semi or Fully Autonomous Vehicles, *USPTO*, Utility Patent # 19/016,240, Filed on 01/10/2025.
8. **Nojoumian M.**, Adaptive Cyber Manufacturing (ACM) Through Online Human-AI Partnerships, *USPTO*, Utility Patent Application # 17/862,022, Filed on 07/11/2022.

Peer-Reviewed Journals/Conference Papers

Refereed Journals

1. Skaug L. and **Nojoumian M.**, Risk-Aware Navigation Framework for Autonomous and Human-Driven Vehicles: Integrating Crash Probability Data for Safer Mobility, *SAE International Journal of Connected and Automated Vehicles (JCAV)*, # JCAV-2025-0010R1, 2025.
2. Skaug L., **Nojoumian M.**, Dang N. and Yap A., Road Crash Analysis and Modeling: A Systematic Review of Methods, Data, and Emerging Technologies, *Applied Sciences*, vol. 15, no. 13: 7115, 2025.
3. Skaug L. and **Nojoumian M.**, A Multimodal Artificial Intelligence Framework for Intelligent Geospatial Data Validation and Correction, *Inventions*, vol. 10, no. 4: 59, 2025.
4. Coston I., Hezel K. D., Plotnizky E. and **Nojoumian M.**, Enhancing Secure Software Development with AZTRM-D: An AI-Integrated Approach Combining DevSecOps, Risk Management, and Zero Trust, *Applied Sciences*, vol. 15, no. 15: 8163, 2025.

5. Coston I., Plotnizky E. and **Nojoumian M.**, Comprehensive Study of IoT Vulnerabilities and Countermeasures, *Applied Sciences*, vol. 15, no. 6: 3036, 2025.
6. Qu F., Dang N., Furht B. and **Nojoumian M.**, Comprehensive Study of Driver Behavior Monitoring Systems Using Computer Vision and Machine Learning Techniques, *Journal of Big Data (JBD), Springer*, vol. 11, no. 32, 44 pages, 2024.
7. Shaller A., Zamir L. and **Nojoumian M.**, Roadmap of Post-Quantum Cryptography Standardization: Side-Channel Attacks and Countermeasures, *Information and Computation, Elsevier*, vol. 295, part B, page 105112, 2023.
8. Zamir L. and **Nojoumian M.**, Localized State-Change Consensus in Immense and Highly Dynamic Environments, *Cryptography, Special Issue on Emerging Topics in Blockchain Security and Privacy*, vol. 6, no. 2: 23, 2022.
9. Pourtahmasbi P. and **Nojoumian M.**, Analysis of Reputation-Based Mining Paradigm Under Dishonest Mining Attacks, *Blockchain: Research and Applications (BCRA), Elsevier*, vol 3, issue 2, page 100065, 2022.
10. Golchubian A., Marques O. and **Nojoumian M.**, Photo Quality Classification Using Deep Learning, *Multimedia Tools and Applications (MTAP), Springer*, vol 80, pp. 22193–22208, 2021.
11. Alvarez R. and **Nojoumian M.**, Comprehensive Survey on Privacy-Preserving Protocols for Sealed-Bid Auctions, *Computers and Security (CS), Elsevier*, vol 88, pp. 101502-101515, 2020.
12. Abd M. A., Gonzalez I., Ades C., **Nojoumian M.** and Engeberg E. D., Simulated Robotic Device Malfunctions Resembling Malicious Cyberattacks Impact Human Perception of Trust, Satisfaction, and Frustration, *Int. J. of Advanced Robotic Systems (IJARS), SAGE*, vol 16, issue 5, pp. 1-16, 2019.
13. Cordero C. G., Traverso G., **Nojoumian M.**, Habib S. M., Muhlhauser M., Buchmann J. and Vasilomanolakis E., Sphinx: a Colluder-Resistant Trust Mechanism for Collaborative Intrusion Detection, *IEEE Access*, vol. 6, pp. 72427-72438, 2018.
14. Tonyali S., Akkaya K., Saputro N., Uluagac A. S. and **Nojoumian M.**, Privacy-Preserving Protocols for Secure and Reliable Data Aggregation in IoT-Enabled Smart Metering Systems, *Future Generation Computer Systems (FGCS), Elsevier*, vol. 78, issue 2, pp. 547-557, 2018.
15. Subramanian S., Mozaffari Kermani M, Azarderakhsh R. and **Nojoumian M.**, Reliable Hardware Architectures for Cryptographic Block Ciphers LED and HIGHT, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol 36, issue 10, pp. 1750-1758, 2017.
16. Eslami Z., Pakniat N. and **Nojoumian M.**, Ideal Social Secret Sharing Using Birkhoff Interpolation Method, *Security and Communication Networks (SCN), John Wiley and Sons, Ltd*, vol. 9, issue 18, PP. 4973-4982, 2016.
17. **Nojoumian M**. and Stinson D. R., Sequential Secret Sharing as a New Hierarchical Access Structure, *Journal of Internet Services and Information Security (JISIS), Special Issue on Next Generation Networks and Systems Security*, vol. 5, issue 2, pp. 24-32, 2015.
18. **Nojoumian M**. and Stinson D. R., On Dealer-Free Dynamic Threshold Schemes, *Advances in Mathematics of Communications (AMC), American Institute of Mathematical Sciences*, vol. 7, no. 1, pp. 39-56, 2013.
19. **Nojoumian M.** and Lethbridge T. C., Reengineering PDF-Based Documents Targeting Complex Software Specifications, *International Journal of Knowledge and Web Intelligence (IJKWI), Inderscience Publishers*, vol. 2, no. 4, pp. 292-319, 2011.
20. **Nojoumian M.**, Stinson D. R., and Grainger M., Unconditionally Secure Social Secret Sharing Scheme, *IET Information Security (IFS), Special Issue on Multi-Agent and Distributed Information Security*, vol. 4, issue 4, pp. 202-211, 2010.

Refereed Conferences

1. Tolbert S. and **Nojoumian M.**, Cross-Cultural Expectations from Self-Driving Cars, *Hawaii International Conference on Human Factors in Design, Engineering, and Computing (AHFE)*, Honolulu, USA, 10 pages, 2025.

2. Park C. and **Nojoumian M.**, Social Acceptability of Autonomous Vehicles: Unveiling Correlation of Passenger Trust and Emotional Response, *4th International Conference on HCI in Mobility, Transport and Automotive Systems (MobiTAS)*, Springer LNCS 13335, pp. 402–415, Gothenburg, Sweden, 2022.
3. Zamir L., Shaan A. and **Nojoumian M.**, ISRaft Consensus Algorithm for Autonomous Units, *IEEE 29th International Conference on Network Protocols (ICNP)*, pp. 1-6, Dallas, USA, 2021.
4. Pourtahmasbi P. and **Nojoumian M.**, Impacts of Trust Measurements on the Reputation-Based Mining Paradigm, *3rd Conference on Blockchain Research & Applications for Innovative Networks and Services (BRAINS)*, IEEE, pp. 225-228, Paris, France, 2021.
5. Zamir L. and **Nojoumian M.**, Information Sharing in the Presence of Adversarial Nodes Using Raft, *Future Technologies Conf. (FTC)*, Springer LNNS 360, pp. 159-172, Vancouver, Canada, 2021.
6. Craig J. and **Nojoumian M.**, Should Self-Driving Cars Mimic Human Driving Behaviors? *3rd International Conference on HCI in Mobility, Transport and Automotive Systems (MobiTAS)*, Springer LNCS 12791, pp. 213-225, Washington DC, USA, 2021. **Received the Best Paper Award**
7. Alvarez R. and **Nojoumian M.**, Efficient Implementation and Computational Analysis of Privacy-Preserving Auction Protocols, *Future of Information and Communication Conference (FICC)*, Springer AISC 1129, pp. 655-671, San Francisco, USA, 2020. **Received the Best Paper Award**
8. Raeini M. G. and **Nojoumian M.**, Secure Trust Evaluation Using Multipath and Referral Chain Methods, *15th International Workshop on Security and Trust Management (STM)*, Springer LNCS 11738, pp. 124-139, Luxembourg, 2019.
9. Raeini M. G. and **Nojoumian M.**, Privacy-Preserving Big Data Analytics: From Theory to Practice, *International Conference on Security, Privacy and Anonymity in Computation, Communication and Storage (SpaCCS)*, Springer LNCS 11637, pp. 45-59, Atlanta, USA, 2019.
10. Shahrdar S., Park C. and **Nojoumian M.**, Human Trust Measurement Using an Immersive Virtual Reality Autonomous Vehicle Simulator, *2nd AAAI/ACM Conference on AI, Ethics, and Society (AIES)*, pp. 515-520, Honolulu, USA, 2019. **Acceptance Rate: 34/220: 15%**
11. **Nojoumian M.**, Rational Trust Modeling, *9th Conference on Decision and Game Theory for Security (GameSec)*, Springer LNCS 11199, pp. 418-431, Seattle, USA, 2018.
12. Park C., Shahrdar S. and **Nojoumian M.**, EEG-Based Classification of Emotional State Using an Autonomous Vehicle Simulator, *10th IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM)*, pp. 297-300, Sheffield, UK, 2018. **Featured by the IEEE Xplore Innovation Spotlight**
13. **Nojoumian M.**, Golchubian A., Njilla L., Kwiat K. and Kamhoua C., Incentivizing Blockchain Miners to Avoid Dishonest Mining Strategies by a Reputation-Based Paradigm, *Computing Conference (CC)*, Springer AISC 857, pp. 1118-1134, London, UK, 2018.

    The 2nd version with proofs appears as a chapter in *Blockchain and Distributed Systems Security*, Wiley-IEEE Computer Society, 1st ed, ISBN-13: 978-1119519607, Chapter 11, pp. 233-251, 2019.
14. Shahrdar S., Menezes L. and **Nojoumian M.**, A Survey on Trust in Autonomous Systems, *Computing Conference (CC)*, Springer AISC 857, pp. 368-386, London, UK, 2018.
15. Ades C., Gonzalez I., AlSaidi M., **Nojoumian M.**, Bai O., Aravelli A., Lagos L. and Engeberg E., Robotic Finger Force Sensor Fabrication and Evaluation Through a Glove, *31st Florida Conference on Recent Advances in Robotics (FCRAR)*, pp. 60-65, Orlando, US, 2018. **Received the Best Paper Award**
16. Raeini M. G. and **Nojoumian M.**, Secure Error Correction Using Multiparty Computation, *8th IEEE Annual Computing and Communication Workshop and Conference (CCWC)*, pp. 468-473, Las Vegas, USA, 2018.
17. Traverso G., Garcia C., **Nojoumian M.**, Azarderakhsh R., Demirel D., Habib S.M. and Buchmann J., Evidence-Based Trust Mechanism Using Clustering Algorithms for Distributed Storage Systems, *15th IEEE Annual Conf. on Privacy, Security and Trust (PST)*, pp. 277-282, Calgary, Canada, 2017.
18. Abd M. A., Gonzalez I., **Nojoumian M.** and Engeberg E. D., Impacts of Robot Assistant Performance on Human Trust, Satisfaction, and Frustration, *Robotics: Science and Systems (RSS), Morality and Social Trust in Autonomous Robots Workshop*, 4 pages, Boston, USA, 2017.

19. **Nojoumian M.**, Golchubian A., Saputro N. and Akkaya K., Preventing Collusion Between SDN Defenders and Attackers Using a Game Theoretical Approach, *IEEE INFOCOM: Advances in Software Defined and Context Aware Cognitive Radio Nets (SCAN)*, pp. 802-807, Atlanta, USA, 2017.
20. Abd M. A., Gonzalez I., **Nojoumian M.** and Engeberg E. D., Trust, Satisfaction and Frustration Measurements for Real-Time Human-Robot Interaction, *30th Florida Conference on Recent Advances in Robotics (FCRAR)*, pp. 89-93, Boca Raton, USA, 2017.
21. **Nojoumian M.**, Unconditionally Secure Proactive Verifiable Secret Sharing Using New Detection and Recovery Techniques, *14th IEEE Annual Conference on Privacy, Security and Trust (PST)*, pp. 269-274, Auckland, New Zealand, 2016.
22. Krishnamachari S., **Nojoumian M.**, and Akkaya K., Implementation and Analysis of Dutch-Style Sealed-Bid Auctions: Computational vs Unconditional Security, *1st IEEE International Conference on Information Systems Security and Privacy (ICISSP)*, pp. 106-113, Angers, France, 2015.
23. **Nojoumian M.**, Trust, Influence and Reputation Management Based on Human Reasoning, *4th AAAI Workshop on Incentives and Trust in E-Communities (WIT-EC)*, pp. 21-24, Austin, USA, 2015.
24. **Nojoumian M.**, Generalization of Socio-Rational Secret Sharing with a New Utility Function, *12th IEEE Annual Conference on Privacy, Security and Trust (PST)*, pp. 338-341, Toronto, Canada, 2014.
25. **Nojoumian M.** and Stinson D. R., Efficient Sealed-Bid Auction Protocols Using Verifiable Secret Sharing, *10th International Conference on Information Security Practice and Experience (ISPEC)*, Springer LNCS 8434, pp. 302-317, Fuzhou, China, 2014. **Acceptance Rate: 36/158: 23%**
26. **Nojoumian M.** and Stinson D. R., Socio-Rational Secret Sharing as a New Direction in Rational Cryptography, *3th Conference on Decision and Game Theory for Security (GameSec)*, Springer LNCS 7638, pp. 18-37, Budapest, Hungary, 2012. **Acceptance Rate: 10/37: 27%**
27. **Nojoumian M.** and Stinson D. R., Social Secret Sharing in Cloud Computing Using a New Trust Function, *10th IEEE Annual Conference on Privacy, Security and Trust (PST)*, pp. 161-167, Paris, France, 2012.
28. **Nojoumian M.** and Stinson D. R., Unconditionally Secure First-Price Auction Protocols Using a Multicomponent Commitment Scheme, *12th Inter Conf. on Information & Communications Security (ICICS)*, Springer LNCS 6476, pp. 266-280, Barcelona, Spain, 2010. **Acceptance Rate: 31/135: 23%**
29. **Nojoumian M.** and Stinson D. R., Brief Announcement: Secret Sharing based on the Social Behaviors of Players, *29th ACM Symposium on Principles of Distributed Computing (PODC)*, pp. 239-240, Zurich, Switzerland, 2010.
30. **Nojoumian M.** and Nair D. K., Comparing Genetic Algorithm and Guided Local Search Methods by Symmetric TSP Instances, *10th ACM Genetic and Evolutionary Computation Conference (GECCO)*, pp. 1131-1132, Atlanta, USA, 2008.
31. **Nojoumian M.** and Lethbridge T. C., Extracting Document Structure to Facilitate a Knowledge Base Creation for the UML Superstructure Specification, *4th IEEE International Conference on Information Technology: New Generations (ITNG)*, pp. 393-400, Las Vegas, USA, 2007.
32. **Nojoumian M.** and Lethbridge T. C., A New Approach for the Trust Calculation in Social Networks, *3rd International Conference on E-Business (ICE-B): Part of ICETE*, Springer CCIS vol. 9, pp. 257-264, Setubal, Portugal, 2006. **Selected as a Best Paper**

    The 2nd version appears as a chapter in *E-business and Telecommunication Networks (E-BTN):* Springer CCIS, vol. 9, pp. 64-77, 2008. **Acceptance Rate: 29/326: 9%**
33. **Nojoumian M.** and Tran T., Computational Politics and Economy for the Establishment of an Integrated Intelligent Government, *19th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)*, pp. 332-336, Ottawa, Canada, 2006.

Refereed Presentations

1. **Nojoumian M.**, New Reputation-Based Mining Paradigm: Incentivizing Blockchain Miners to Avoid Dishonest Mining Strategies, *Defense & Innovation: A Cybercrime Symposium (CyberFlorida)*, Tampa, USA, Presentation on February 15, 2023.

2. **Nojoumian M.**, Privacy-Preserving Planning and Coordination Among Autonomous Systems Equipped with Resource-Constrained Devices, *International Cryptographic Module Conference (ICMC)*, Vancouver, Canada, Presentation on May 17, 2019.
3. **Nojoumian M.**, Game Theoretical Analysis of a Reputation-Based Cryptocurrency Mining Paradigm, *18th International Symposium on Dynamic Games and Applications (ISDG)*, Grenoble, France, Presentation on July 10, 2018.
4. **Nojoumian M.** and Stinson D. R., Dealer-Free Threshold Changeability in Secret Sharing Schemes, *9th International Conference on Information Theoretic Security (ICITS)*, Tacoma, USA, Presentation on August 10, 2016.
5. **Nojoumian M.** and Stinson D. R., From Rational Secret Sharing to Social and Socio-Rational Secret Sharing, *5th World Congress of the Game Theory Society (GAMES)*, Maastricht, The Netherlands, Presentation on July 24, 2016.

PhD and MSc Theses

- **Nojoumian M.**, Novel Secret Sharing and Commitment Schemes for Cryptographic Applications, *School of Computer Science, University of Waterloo, Canada*, PhD thesis, 2012.
- **Nojoumian M.**, Document Engineering of Complex Software Specifications, *Computer Science Department, University of Ottawa, Canada*, MSc thesis, 2007.

Teaching Experience

* Semester Year (Class Size): ~ 85-90% Very Good/Excellent ratings for all courses (Available upon req.)

Florida Atlantic University

- COP 3530: Data Structures and Algorithm Analysis
  Fall 25 (**97**), Sum 25 (**81**), Spring 25 (**97**), Fall 24 (**93**), Sum 23 (**128**), Spring 23 (**127**), Fall 22 (**139**), Sum 22 (**94**), Spring 22 (**108**), Spring 20 (**77**), Spring 19 (**78**), Fall 17 (**87**), Sum 17 (**72**), Spring 17 (**50**), Sum 16 (**59**)
- CIS 5371/4634: Practical Aspects of Modern Cryptography/Applied Crypto and Security
  Fall 25 (**63**), Spring 25 (**56**), Spring 24 (**60**), Spring 23 (**64**), Spring 22 (**36**), Fall 20 (**14**), Fall 18 (**29**), Fall 17 (**15**), Fall 16 (**9**), Fall 15 (**7**)
- CNT 4403/COT 5930: Foundations of Cybersecurity
  Sum 24 (**73**), Fall 21 (**71**), Spring 21 (**56**)
- COT 6427: Secret Sharing Protocols
  Fall 24 (**12**), Spring 20 (**15**), Spring 18 (**18**), Spring 17 (**26**), Spring 16 (**11**)
- COT 4930: Java Programming
  Spring 18 (**78**)
- COT 4930: Introduction to Security and Cryptography
  Spring 16 (**22**), Sum 15 (**15**)
- CIS 6370: Computer Data Security (One-month course)
  09/2025 (**21**), 10/2024 (**18**), 08/2022 (**14**), 11/2020 (**11**)
- Cybersecurity Bootcamp (One-week course)
  08/2024 (**241**), 08/2023 (**161**), 08/2021 (**33**), 05/2021 (**17**), 01/2021 (**14**)
- COT 6900/4900: Direct Independent Study
  Twenty-three (**24**) projects since 2017

Southern Illinois University

- CS 215: Discrete Mathematics
  Fall 14 (**29**), Spring 14 (**21**), Fall 12 (**28**)

- CS 591: Hot Topics in Cybersecurity
  Spring 14 (**15**)
- CS 202: Introduction to Computer Science
  Sum 14 (Online), Fall 13 (**41**)

Community Outreach

- Technical Talk at St Andrews Country Club, 2025
  05/07 Presented to seniors of a Boca Raton community
- Technical Talk at Sinai Residences' Symphony Hall, 2023
  06/20 Presented to seniors of a Boca Raton community
- Technical Talk at the Osher Lifelong Learning Institute (OLLI), 2022
  12/01 Presented to 101 seniors of the Boca Raton community
- Technical Talks at FAU Alexander D. Henderson University School, 2019-2021
  03/26/2021, 02/20/2019, 02/22/2019, 10/02/2019
- Technical Talk at the Institute for Learning in Retirement (ILIR), 2018
  04/30 Presented to seniors of the Boca Raton community
- ENG1935: Introduction to Security and Cryptography, 2016
  Summer course offered to students from local high schools

Supervising PhD/MSc/UG Students

Current Students

- Mindy Knowles (PhD), FAU, 2024-Now
  Topic: Human-AI/SDCs Interactions
- Bayan Al Barakati (PhD), FAU, 2024-Now
  Topic: Trust in Vehicular Networks
- Lars Skaug (PhD), FAU, 2023-Now
  Topic: Road Risk Awareness in SDCs
- Ian Coston (PhD), FAU, 2022-Now
  Topic: Security of IoT Devices
- Anik Sahai (UG), FAU, 2024-Now
  Topic: Remote Operations of Robots

Former Graduate Students

- Fangming Qu (MSc), FAU, Defended on April 03, 2024
  Thesis: Study and Analysis of Machine Learning Techniques for Detection of Distracted Drivers
- Steven Tolbert (MSc), FAU, Defended on November 30, 2022
  Thesis: Analysis of Driving Behaviors & Relevant Driving Preferences Regarding Self-Driving Cars
- Linir Zamir (PhD), FAU, Defended on July 29, 2022
  Dissertation: Decentralized Systems for Information Sharing in Dynamic Environment Using Localized Consensus
- Arash Golchubian (PhD), FAU, Defended on July 29, 2022
  Dissertation: Image Quality and Beauty Classification Using Deep Learning
- Mohammad Raeini (PhD), FAU, Defended on June 30, 2022 (Co-Advised)
  Dissertation: Selected Applications of MPC

- Pouya Pourtahmasbi (MSc), FAU, Defended on April 14, 2021
  Thesis: Implementation and Assessment of the Reputation-Based Mining Paradigm by a Comprehensive Simulation
- Corey Park (MSc), FAU, Defended on November 21, 2018
  Thesis: Using Electroencephalography and Structured Data Collection Techniques to Measure Passenger Emotional Response in Human-Autonomous Vehicle Interactions
- Iker Gonzalez Moya (MSc), FAU, Defended on July 31, 2018
  Thesis: A Collaborative Approach for Real-Time Measurements of Human Trust, Satisfaction and Frustration in Human-Robot Teaming
- Ramiro Alvarez (MSc), FAU, Defended on July 27, 2018
  Thesis: Efficient Implementation and Computational Analysis of Privacy-Preserving Protocols for Securing the Financial Markets
- Shervin Shahrdar (MSc), FAU, Defended on April 17, 2018
  Thesis: New Structured Data Collection Approach for Real-Time Trust Measurement in Human-Autonomous Vehicle Interactions
- Arash Golchubian (MSc), FAU, Defended on December 11, 2017
  Thesis: Utilizing a Game Theoretical Approach to Prevent Collusion and Incentivize Cooperation in Cybersecurity Contexts
- Sriram Krishnamachari (MSc), SIU, 2013
  Thesis: Implementation and Analysis of Dutch-Style Sealed-Bid Auctions: Computational vs Unconditional Security

<u>Graduate/UG Researchers</u>

- Amy Yap (UG), FAU, 2024-2025
  Topic: Road Crash Analysis
- Eadan Plotnizky (UG), FAU, 2023-2025
  Topic: Security of IoT Devices
- Nolan Dang (UG), FAU, 2023-2025
  Topic: Occupant Monitoring in SDCs
- Nikki Leali (UG), FAU, 2023-2024
  Topic: Image Classification Using Deep Learning
- Maria Davis (UG), FAU, 2021
  Project: Beauty Classification Using Deep Learning
- Aman Shaan (UG), FAU, 2021
  Project: Reputation-Based Mining Paradigm
- Jamie Craig (Grad), FAU, 2020
  Project: Study of Driving Behaviors in SDC
- Ciara O'Neill (UG), FAU, 2020
  Project: Implementation of Rational Trust Modeling
- Pouya Pourtahmasbi (UG), FAU, 2019
  Project: Survey on Mining Attacks
- Ahsan Sanaullah (UG), FAU, 2018
  Project: Developing Software Modules for the Self-driving Car Simulator
- Luiza Menezes (UG), FAU, 2017
  Project: Survey on Trust in Autonomous Systems

Selected Invited Talks

- University of San Diego, Shiley-Marcos School of Engineering, USA, Apr 29, 2024
- Florida Atlantic University, Charles E. Schmidt College of Science, USA, Apr 10, 2024
- Florida Atlantic University, Research in Action, Division of Research, USA, Feb 20, 2023
- University of Central Florida, Department of Finance, USA, Feb 17, 2023
- Cleveland State University, Department of Information Systems, USA, Apr 27, 2020
- Georgia State University, Department of Computer Science, USA, Apr 06, 2020
- Florida International University, Department of ECE, USA, Apr 03, 2020
- York University, Department of Electrical Eng. & Computer Science, Canada, Mar 27, 2020
- California State U East Bay, Math and Computer Science Department, USA, Mar 26, 2020
- American University, Department of Computer Science, USA, Mar 02, 2020
- Embry-Riddle Aeronautical University, Department of EECS, USA, Jan 17, 2020
- U.S. Air Force, Cyber Assurance Branch, Implementation-Based Projects, USA, Sep 12, 2019
- U.S. Air Force, 2nd Annual Symposium on Blockchain and Internet of Things, USA, Jul 24, 2018
- FAU Lockheed Martin Day, Autonomous Systems Mini Workshop, USA, Apr 27, 2018
- NSF Industry-University Cooperative Research Center, IAB meeting, USA, Nov 30, 2017
- U.S. Army Research Laboratory, Blockchain Symposium, USA, Nov 13, 2017
- U.S. Air Force, 4th Colloquium on Game Theory Applied to Cyber Security, USA, Jun 01, 2017
- Florida International University, Department of ECE, USA, Jul 14, 2015
- Florida Atlantic University, Department of CEE and CS, USA, Nov 14, 2014
- California State U Sacramento, Computer Science Department, USA, May 02, 2014
- Southern Illinois U Edwardsville, Computer Science Department, USA, Apr 14, 2014
- University of the Pacific, School of Engineering & Computer Science, USA, Mar 26, 2014
- Sonoma State University, Department of Computer Science, USA, Mar 12, 2014
- California State U Los Angeles, Department of Computer Science, USA, Mar 07, 2014
- California State U East Bay, Math and Computer Science Department, USA, Feb 04, 2014
- Clark University, Department of Mathematics and Computer Science, USA, Dec 05, 2013
- University of Washington Tacoma, Institute of Technology, USA, Nov 20, 2013
- University of Cincinnati, School of Information Technology, USA, Aug 12, 2013
- San Jose State University, Department of Computer Engineering, USA, May 14, 2013
- University of Houston, Department of Engineering Technology, USA, Jun 26, 2012
- University of Southern Indiana, Romain College of Business, USA, Jun 05, 2012
- Southern Illinois U Carbondale, Department of Computer Science, USA, May 15, 2012
- University of Toronto, Department of Computer Science, Canada, May 11, 2012
- University of California Berkeley, Department of Computer Science, USA, Apr 04, 2012
- Microsoft Research Silicon Valley, Theory Seminar MSR, USA, Mar 21, 2012
- Centrum Wiskunde and Informatica, Cryptology Group, Netherlands, Dec 16, 2011

Professional Services

General Service

- Undergraduate Programs Committee (Currently Chair), FAU, 2015-Now
- Center for Complex Systems, Director Search, FAU, 2024-2025
- Computer Science, Faculty Search, FAU, 2022-2023, 2024-2025
- Panelist in the Secure and Trustworthy Cyberspace Program (SaTC), Career, NSF, 2024
- Panelist in the Secure and Trustworthy Cyberspace Program (SaTC), NSF, 2024
- Center for e-Learning, Faculty Advisory Board, FAU, 2018-2024
- College Research Committee, FAU, 2020-2021
- COECS-I-Sense Seed Funding Review committee, FAU, 2021
- Reviewer for the Research Grants Council (RGC) of Hong Kong, 2020
- Panelist in the Information and Intelligent Systems Program (IIS), NSF, 2019
- Panelist in the Secure and Trustworthy Cyberspace Program (SaTC), NSF, 2015
- Panelist in the Seed Grant Program, Florida Center for Cybersecurity, 2015
- Dissertation Research Assistantship Award Committee, SIU, 2013-2014
- CS Representative in the Computing Advisory Committee, SIU, 2013-2014

Editorial or Reviewer Board

- International Journal of Connected and Automated Vehicles (SAE), Associate Editor, 2024-Now
  https://www.sae.org/publications/collections/content/E-JOURNAL-12
- Scientific Reports (Nature), Editorial Board, 2023-Now
  https://www.nature.com/srep/about/editors
- Cryptography Journal (MDPI), Reviewer Board, 2020-2024
  https://www.mdpi.com/journal/cryptography/submission_reviewers

Program Committee

- 22nd Annual Conference on Privacy, Security and Trust (PST'25)
- Florida Conference on Recent Advances in Robotics (FCRAR'25)
- 21st Annual Conference on Privacy, Security and Trust (PST'24)
- 7th IEEE International Conference on Blockchain (Blockchain'24)
- 6th IEEE International Conference on Blockchain (Blockchain'23)
- 13th Conference on Decision and Game Theory for Security (GameSec'22)
- 5th AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES'22)
- 5th IEEE International Conference on Blockchain (Blockchain'22)
- COMPSAC Symposium on Security, Privacy and Trust in Computing (SEPT'22)
- 12th Conference on Decision and Game Theory for Security (GameSec'21)
- 4th AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES'21)
- 4th IEEE International Conference on Blockchain (Blockchain'21)
- 2nd International Symposium on Emerging Information Security and Applications (EISA'21)

- 11th Conference on Decision and Game Theory for Security (GameSec'20)
- 3rd AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES'20)
- 3rd IEEE International Conference on Blockchain (Blockchain'20)
- International Joint Conf on AI, Computational Sustainability & Human Well-Being (IJCAI'20)
- 1st Int. Workshop on Lightweight Blockchain for Edge Intelligence and Security (LightChain'19)
- 2nd International Workshop on Distributed Ledger of Things (DLoT'19)
- 10th Conference on Decision and Game Theory for Security (GameSec'19)
- 17th Annual Conference on Privacy, Security and Trust (PST'19)
- 13th International Conference on Trust Management (TM'19)
- 5th International Conference on Information Systems Security and Privacy (ICISSP'19)
- 1st International Workshop on Blockchain Enabled Sustainable Smart Cities (BLESS'18)
- 1st International Workshop on Distributed Ledger of Things (DLoT'18)
- 9th Conference on Decision and Game Theory for Security (GameSec'18)
- 16th Annual Conference on Privacy, Security and Trust (PST'18)
- 4th International Conference on Information Systems Security and Privacy (ICISSP'18)
- 12th International Conf on Emerging Security Info, Systems & Tech (SECURWARE'18)
- 12th International Conference on Trust Management (TM'18)
- Florida Conference on Recent Advances in Robotics (FCRAR'18)
- 1st IEEE Int. Conf. on Communications: Workshop On 5G Wireless Security (5G-SECURITY'18)
- 8th IEEE Annual Computing and Communication Workshop and Conference (CCWC'18)
- 8th Conference on Decision and Game Theory for Security (GameSec'17)
- 3rd International Conference on Information Systems Security and Privacy (ICISSP'17)
- 11th International Conf on Emerging Security Info, Systems & Tech (SECURWARE'17)
- 7th Conference on Decision and Game Theory for Security (GameSec'16)
- 14th Annual Conference on Privacy, Security and Trust (PST'16)
- 2nd International Conference on Information Systems Security and Privacy (ICISSP'16)
- 10th International Conf on Emerging Security Info, Systems & Tech (SECURWARE'16)
- 6th Conference on Decision and Game Theory for Security (GameSec'15)
- 13th Annual Conference on Privacy, Security and Trust (PST'15)
- 1st International Conference on Information Systems Security and Privacy (ICISSP'15)
- 5th Conference on Decision and Game Theory for Security (GameSec'14)
- 12th Annual Conference on Privacy, Security and Trust (PST'14)
- 4th Conference on Decision and Game Theory for Security (GameSec'13)
- 11th Annual Conference on Privacy, Security and Trust (PST'13)

Book Reviewer

- Wiley, Game Theory and Machine Learning for Cyber Security, 2019
  Edited by Drs. Charles A. Kamhoua, Christopher D. Kiekintveld, Fei Fang, and Quanyan Zhu
- CRC, Cryptography: Theory and Practice, 4th Edition, 2017
  Written by Drs. Douglas R. Stinson, and Maura B. Paterson

Michael DeGiorgio

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ACADEMIC APPOINTMENTS

Professor (tenured), Department of Electrical Engineering and Computer Science, Florida Atlantic University	08/2025 – Present
Associate Chair, Department of Electrical Engineering and Computer Science, Florida Atlantic University	08/2023 – Present
Affiliate Associate Professor, Department of Biomedical Engineering, Florida Atlantic University	08/2024 – Present
Affiliate Associate Professor, Department of Biological Sciences, Florida Atlantic University	04/2021 – Present
Member, Memorial Cancer Institute Florida Atlantic University Cancer Center of Excellence	05/2024 – Present
Member, Center for SMART Health, Florida Atlantic University	01/2024 – Present
Member, Institute for Human Health and Disease Intervention, Florida Atlantic University	01/2020 – Present
Associate Professor (tenured), Department of Electrical Engineering and Computer Science, Florida Atlantic University	08/2020 – 08/2025
Assistant Professor (tenure track), Department of Computer and Electrical Engineering and Computer Science, Florida Atlantic University	08/2019 – 08/2020
Associate Professor (tenured), Department of Biology, Pennsylvania State University	07/2019 – 08/2019
Assistant Professor (tenure track), Department of Biology, Pennsylvania State University	01/2014 – 07/2019
Affiliated Assistant Professor, Department of Statistics, Pennsylvania State University	11/2014 – 08/2019
Member, Center for Computational Biology and Bioinformatics, Pennsylvania State University	08/2017 – 08/2019
Member, Institute for Computational and Data Sciences, Pennsylvania State University	01/2014 – 08/2019
Member, Center for Medical Genomics, Pennsylvania State University	01/2014 – 08/2019
NSF Postdoctoral Fellow, Department of Integrative Biology, University of California, Berkeley	09/2011 – 12/2013

EDUCATION

University of Michigan, Ph.D., Bioinformatics	2011
University of Central Florida, B.S., Mathematics, *summa cum laude*	2006
University of Central Florida, B.S., Computer Science, *magna cum laude*	2006

DISTINCTIONS AND AWARDS

Distinguished Engineering Achievement award, The Engineers' Council	2024
Certificate of Excellence for poster presentation at the Research Showcase, Florida Atlantic University	2019
Alfred P. Sloan Foundation Research Fellowship in Computational and Evolutionary Molecular Biology	2017 – 2019
NSF Postdoctoral Research Fellowship in Biology (NSF DBI-1103639)	2011 – 2014
Visiting Scholar in the Department of Mathematics and Statistics at the University of Canterbury	11/2013
Short-term visitor at NIMBioS at the University of Tennessee	03/2012
University of Michigan Distinguished Dissertation Honorable Mention (top 16 of >750)	2012
NIH Genome Sciences Training Grant Fellowship (NIH T32HG00040)	2010 – 2011
Visiting Scholar in the Biomathematics Research Centre at the University of Canterbury	11/2010
PIBS Graduate Student Award for Excellence in Research (out of 14 Ph.D. programs)	2010
FASEB MARC Travel Award for the ASHG meeting ($1,850)	2010
Burroughs Wellcome Fund Travel Grant for the SMBE meeting ($2,500)	2010
Rackham Merit Fellowship, University of Michigan (three years of support)	2006 – 2010
FASEB MARC Travel Award for the ASHG meeting ($2,500)	2009
NIH Bioinformatics Training Grant Fellowship (NIH T32GM070449)	2007 – 2009
Ford Foundation Diversity Fellowship Honorable Mention	2008
NSF Graduate Research Fellowship Honorable Mention	2007

Rackham Summer Institute Fellowship, University of Michigan (summer support) 2006
Hernandez Award in Mathematics (highest-achieving student in Department of Mathematics) 2006
Florida Merit Scholarship (75% tuition to any Florida public university) 2002 – 2006
Costas G. Lemonopoulos Scholarship ($1,640) 2003

PROFESSIONAL SOCIETIES

Society for Molecular Biology and Evolution 2012 – 2018
American Society of Human Genetics 2009 – 2012, 2018
American Association for the Advancement of Science 2011 – 2012

CURRENT FUNDING

National Institutes of Health 2R35GM128590-06 ($1,874,360) 08/2024 – 05/2029
Maximizing Investigators' Research Award for Established Investigators (MIRA EI)
Identifying complex modes of adaptation from population-genomic data
Role: Principal Investigator

National Science Foundation DEB-2392257 ($648,125) 07/2023 – 06/2026
NSFDEB-NERC: Machine learning tools to discover balancing selection in genomes from spatial and temporal autocorrelations
Role: Principal Investigator

National Science Foundation DBI-2130666 ($596,571) 08/2021 – 07/2025
Statistical tools for learning about trait evolution across species
Role: Co-Principal Investigator (Raquel Assis, Principal Investigator)

PREVIOUS FUNDING

National Science Foundation BCS-1925825 ($255,000) 09/2019 – 08/2024
Collaborative Research: Understanding the deep ancestry of Indigenous people of North America
Role: Principal Investigator

National Institutes of Health 1R35GM128590-05 ($1,784,526) 08/2018 – 07/2024
Maximizing Investigators' Research Award for Early Stage Investigators (MIRA ESI)
Identifying complex modes of adaptation from population-genomic data
Role: Principal Investigator

National Science Foundation DEB-1753489 ($200,000) 03/2018 – 02/2023
SG: Inferring phylogenies under ancestral population structure
Role: Principal Investigator

College of Engineering and Computer Science, Florida Atlantic University ($25,000) 06/2020 – 06/2022
Seed Grant
Uncovering genomic footprints of recent evolutionary history in old world monkeys
Role: Co-Principal Investigator (Raquel Assis, Principal Investigator)

National Science Foundation IIS-2027339 ($90,000) 05/2020 – 04/2022
RAPID: COVID-19 Coronavirus Testbed and Knowledge Base Construction and Personalized Risk Evaluation
Role: Co-Principal Investigator (Xingquan Zhu, Principal Investigator; Massimo Caputi, Co-Principal Investigator)

National Institutes of Health R01GM130691 ($1,658,597, relinquished due to MIRA R35GM128590) 02/2019 – 01/2023
Y Chromosome Evolution
Role: Co-Investigator (Kateryna Makova, Principal Investigator; Paul Medvedev, Co-Investigator)

Alfred P. Sloan Foundation ($60,000) 09/2017 – 09/2019
Research Fellowship in Computational and Evolutionary Molecular Biology
Role: Principal Investigator

Center for Human Evolution and Diversity (CHED), Pennsylvania State University ($20,000) 01/2016 – 12/2016
Seed Grant
Are human sexually dimorphic traits affected by variation in Y-chromosomal ampliconic gene copy number?
Role: Co-Investigator (Kateryna Makova, Principal Investigator)

National Science Foundation DBI-1103639 ($155,000) 09/2011 – 12/2013
Postdoctoral Research Fellowship in Biology
Using mathematical models to study the spatial distribution of genetic variation
Role: Principal Investigator

MANUSCRIPTS SUBMITTED FOR JOURNAL OR CONFERENCE PUBLICATION

*EQUAL CONTRIBUTIONS, †CORRESPONDING, **BOLD** INDICATES GROUP MEMBER

6. **MR Amin**, **SP Arnab**, **Mohammad Khan**,, **M DeGiorgio†**. Detecting positive selection by modeling structure within images of genetic variation. Submitted to *Genome Biology and Evolution*.
5. S Ali, O Faqah, E Neubarth, MS Ashraf, **M DeGiorgio**, M Block, W Asghar**†**. Prediction of chronic obstructive pulmonary disease using machine learning models. Submitted to *Journal of Big Data*.
4. **SP Arnab**, **AL Campelo dos Santos**, M Fumagalli, **M DeGiorgio†**. Identifying adaptive footprints in the presence of demographic uncertainty. *bioRxiv* doi:10.1101/2025.08.15.670602. Submitted to *Genome Biology and Evolution*.
3. JM Lozano, **M DeGiorgio**, R Assis, R Adams**†**. Discriminating models of trait evolution. *bioRxiv* doi:10.1101/2025.06.12.659377. Submitted to *Evolution*.
2. **CG Santander***, **AL Campelo dos Santos***, **SP Arnab**, M Fumagalli**†**, **M DeGiorgio†**. Negative frequency-dependent selection: a positive outlook with deep learning. Under revision at *Philosophical Transactions of the Royal Society B*.
1. F Cabral*, **AL Campelo dos Santos***, B Barcena, R Soto, Y Łkete, **M DeGiorgio†**, J Lindo**†**. The genomic and oral histories of the Lipan Apache. Under revision at *Nature*.

JOURNAL PUBLICATIONS

*EQUAL CONTRIBUTIONS, †CORRESPONDING, **BOLD** INDICATES GROUP MEMBER

AS THE FIRST, LAST, OR CORRESPONDING AUTHOR

50. **R Kanjilal**, **AL Campelo dos Santos**, **SP Arnab**, **M DeGiorgio†**, R Assis**†** (2025) Genomic anomaly detection with functional data analysis. *Genes* 16:710.
49. **SP Arnab**, **AL Campelo dos Santos**, M Fumagalli, **M DeGiorgio†** (2025). Efficient detection and characterization of targets of natural selection using transfer learning. *Molecular Biology and Evolution* 42:msaf094.
48. **RH Adams†**, JR Lozano, M Duncan, J Green, R Assis*****, **M DeGiorgio*** (2025) A tale of too many trees: a conundrum for phylogenetic regression. *Molecular Biology and Evolution* 42:msaf032.
47. **MR Amin***, **M Hasan***, **M DeGiorgio†** (2024) Digital image processing to detect adaptive evolution. *Molecular Biology and Evolution* 41:msae242.

46. D First Rider, A Crop Eared Wolf, J Murray, A de Flamingh, **AL Campelo dos Santos**, F Lanoë, MN Zedeño, **M DeGiorgio†**, J Lindo**†**, RS Malhi**†** (2024) Genomic analyses correspond with deep persistence of peoples of Blackfoot Confederacy from glacial times. *Science Advances* 10:eadl6595.

45. **AL Campelo dos Santos†**, **M DeGiorgio***, R Assis* (2024) Predicting evolutionary targets and parameters of gene deletion from expression data. *Bioinformatics Advances* 4:vbae002.

44. **RH Adams†**, Z Cain, R Assis*****, **M DeGiorgio*** (2023) Robust phylogenetic regression. *Systematic Biology* 73:140-157.

43. **MR Amin†**, **M Hasan**, **SP Arnab**, **M DeGiorgio†** (2023) Tensor decomposition based feature extraction and classification to detect natural selection from genomic data. *Molecular Biology and Evolution* 40:msad216.

42. **RH Adams†**, **M DeGiorgio†** (2023) Likelihood-based tests of species trees. *Molecular Biology and Evolution* 40:msad159.

41. **SP Arnab†**, **MR Amin**, **M DeGiorgio†** (2023) Uncovering footprints of natural selection through spectral analysis of genomic summary statistics. *Molecular Biology and Evolution* 40:msad157.

40. **AL Campelo dos Santos†**, HS Lavalle Sullasi, O Gokcumen, J Lindo**†**, **M DeGiorgio†** (2023) Spatiotemporal fluctuations of population structure in the Americas revealed by a meta-analysis of the first decade of archaeogenomes. *American Journal of Biological Anthropology* 180:703-714.

39. **AL Campelo dos Santos†**, A Owings, HS Lavalle Sullasi, O Gokcumen, **M DeGiorgio†**, J Lindo**†** (2022) Genomic evidence for ancient human migration routes along South America's Atlantic coast. *Proceedings of the Royal Society B: Biological Sciences* 289:20221078.

38. **M DeGiorgio†**, ZA Szpiech**†** (2022) A spatially aware likelihood test to detect sweeps from haplotype distributions. *PLoS Genetics* 18:e1010134. **[Highlighted by preLights]**

37. **X Cheng†**, **M DeGiorgio†** (2022) *BalLeRMix+*: Mixture model approaches for robust joint identification of both positive selection and long-term balancing selection. *Bioinformatics* 38:861-863.

36. **MR Mughal†**, **M DeGiorgio†** (2021) Properties and unbiased estimation of *F*- and *D*-statistics in samples containing related and inbred individuals. *Genetics* 220:iyab090.

35. **RH Adams**, H Blackmon, **M DeGiorgio†** (2021) Of traits and trees: probabilistic distances under continuous trait models for dissecting the interplay among phylogeny, model, and data. *Systematic Biology* 70:660-680.

34. **RH Adams†**, TA Castoe, **M DeGiorgio†** (2021) *PhyloWGA*: chromosome-aware phylogenetic interrogation of whole genome alignments. *Bioinformatics* 38:1923-1925.

33. **M DeGiorgio†**, R Assis**†** (2021) Learning retention mechanisms and evolutionary parameters of duplicate genes from their expression data. *Molecular Biology and Evolution* 38:1209-1224.

32. J Lindo**†**, **M DeGiorgio†** (2021) Understanding the adaptive evolutionary history of South American ancient and modern populations via genomics. *Genes* 12:360.

31. **MR Mughal†**, **H Koch**, **J Huang**, F Chiaramonte, **M DeGiorgio†** (2020) Learning the properties of adaptive regions with functional data analysis. *PLoS Genetics* 16:e1008896.

30. D Setter, S Mousset, **X Cheng**, R Nielsen, **M DeGiorgio†**, J Hermisson**†** (2020) VolcanoFinder: genomic scans for adaptive introgression. *PLoS Genetics* 16:e1008867.

29. **X Cheng**, **M DeGiorgio†** (2020) Flexible mixture model approaches that accommodate footprint size variability for robust detection of balancing selection. *Molecular Biology and Evolution* 37:3267-3291.

28. **AM Harris**, **M DeGiorgio†** (2020) A likelihood approach for uncovering selective sweep signatures from haplotype data. *Molecular Biology and Evolution* 37:3023-3046.

27. R Vegesna*, M Tomaszkiewicz*, OA Ryder, R Campos-Sánchez, P Medvedev, **M DeGiorgio†**, KD Makova**†** (2020) Ampliconic genes on the great ape Y chromosomes: Rapid evolution of copy number but conservation of expression levels. *Genome Biology and Evolution* 12:852-869

26. **AM Harris**, **M DeGiorgio†** (2020) Identifying and classifying shared selective sweeps from multilocus data. *Genetics* 215:143-171.

25. **H Koch**, **M DeGiorgio†** (2020) Maximum likelihood estimation of species trees from gene trees in the presence of ancestral population structure. *Genome Biology and Evolution* 12:3977-3995.

24. **MR Mughal**, **M DeGiorgio†** (2019) Localizing and classifying adaptive targets with trend filtered regression. *Molecular Biology and Evolution* 36:252-270.

23. **X Cheng**, **M DeGiorgio†** (2019) Detection of shared balancing selection in the absence of trans-species polymorphism. *Molecular Biology and Evolution* 36:177-199.

22. **AM Harris**, NR Garud, **M DeGiorgio†** (2018) Detection and classification of hard and soft sweeps from unphased genotypes by multilocus genotype identity. *Genetics* 210:1429-1452.

21. J Lindo, M Rogers, EK Mallott, B Petzelt, J Mitchell, D Archer, JS Cybulski, RS Malhi**†**, **M DeGiorgio†** (2018) Patterns of genetic coding variation in a Native American population before and after European contact. *American Journal of Human Genetics* 103:806-815.

20. **X Cheng**, **C Xu**, **M DeGiorgio†** (2017) Fast and robust detection of ancestral selective sweeps. *Molecular Ecology* 26:6871-6891.

19. **AM Harris**, **M DeGiorgio†** (2017) Admixture and ancestry inference from ancient and modern samples through measures of population genetic drift. *Human Biology* 89:1. **[Gabriel W. Lasker Award for most significant contribution to the journal]**

18. J Lindo, A Achilli, D Archer, C Valdiosera, B Petzelt, J Mitchell, R Worl, EJ Dixon, T Fifield, M Rasmussen, E Willerslev, J Cybulski, B Kemp**†**, **M DeGiorgio†**, RS Malhi**†** (2017) Ancient individuals from the North American Northwest Coast reveal 10,000 years of regional continuity. *Proceedings of the National Academy of Sciences of the USA* 114:4093-4098.

17. **AM Harris**, **M DeGiorgio†** (2017) An unbiased estimator of gene diversity with improved variance for samples containing related and inbred individuals of any ploidy. *G3: Genes, Genomes, Genetics* 7:671-691.

16. J Lindo, E Huerta-Sánchez, S Nakagome, M Rasmussen, B Petzelt, J Mitchell, JS Cybulski, E Willerslev, **M DeGiorgio†**, RS Malhi**†** (2016) A time transect of exomes from a Native American population before and after European contact. *Nature Communications* 7:13175.

15. **C Prada†**, B Hanna, AF Budd, C Woodley, J Schmutz, J Grimwood, R Iglesias-Prieto, JM Pandolfi, D Levitan, N Knowlton, H Kitano, **M DeGiorgio†**, M Medina**†** (2016) Empty niches after extinctions increase population sizes of modern corals. *Current Biology* 26:1-5.

14. A Fungtammasan, M Tomaszkiewicz, R Campos-Sanchez, K Eckert, **M DeGiorgio†**, KD Makova**†** (2016) Reverse transcription errors and RNA-DNA differences at short tandem repeats. *Molecular Biology and Evolution* 33:2744-2758.

13. **M DeGiorgio†**, NA Rosenberg (2016) Consistency and inconsistency of phylogenetic consensus methods for inferring species trees from gene trees in the presence of ancestral population structure. *Theoretical Population Biology* 110:12-24.

12. **M DeGiorgio†**, CD Huber, MJ Hubisz, I Hellmann, R Nielsen (2016) *SweepFinder2*: Increased sensitivity, robustness, and flexibility. *Bioinformatics* 32:1895-1897.

11. M Raghavan*, M Steinrücken*, K Harris*, S Schiffels*, S Rasmussen*, **M DeGiorgio***, A Albrechtsen*, C Valdiosera*, MC Ávila-Arcos*, A-S Malaspinas*, A Eriksson, I Moltke, M Metspalu, JR Homburger, J Wall, OE Cornejo, JV Moreno-Mayar, TS Korneliussen, T Pierre, M Rasmussen, PF Campos, P de Barros Damgaard, ME Allentoft, J Lindo, E Metspalu, R Rodríguez-Varela, J Mansilla, C Henrickson, A Siguin-Orlando, H Malmström, T Safford Jr, SS Shingarpure, A Moreno-Esrada, M Karmin, K Tambets, A Bergström, Y Xue, V Warmuth, A Friend, J Singarayer, P Valdes, F Balloux, I Leboreiro, JL Vera, H Rangel-Villalobos, D Pettener, D Luiselli, LG Davis, E Heyer, CPE Zollikofer, MS Ponce de León, CI Smith, V Grimes, K-A Pike, M Deal, BT Fuller, B Arriaza, V Standen, MF Luz, F Ricaut, N Guidon, L Osipova, MI Voevoda, OL Posukh, O Balanovsky, M Lavryashina, Y Bogunov, E Khusnutdinova, M Gubina, E

Balanovska, S Fedorova, S Litvinov, B Malyarchuk, M Derenko, MJ Mosher, D Archer, J Cybulski, B Petzelt, J Mitchell, R World, PJ Norman, P Parham, BM Kemp, T Kivisild, C Tyler-Smith, MS Sandhu, M Crawford, R Villems, DG Smith, MR Waters, T Goebel, JR Johnson, RS Malhi, M Jakobsson, DJ Meltzer, A Manica, R Durbin, CD Bustamante, YS Song, R Nielsen, E Willerslev (2015) Genomic evidence for the Pleistocene and recent population history of Native Americans. *Science* doi:10.1126/science.aab3884.

10. **M DeGiorgio†**, KE Lohmueller, R Nielsen (2014) A model-based approach for identifying signatures of ancient balancing selection in genetic data. *PLoS Genetics* 10:e1004561. **[Recommended by Faculty of 1000]**

9. **M DeGiorgio†**, J Syring, AJ Eckert, AI Liston, R Cronn, DB Neale, NA Rosenberg (2014) An empirical evaluation of species tree inference strategies using a multilocus dataset from North American pines. *BMC Evolutionary Biology* 14:67.

8. **M DeGiorgio**, JH Degnan (2014) Robustness to divergence time underestimation when inferring species trees from estimated gene trees. *Systematic Biology* 63:66-82.

7. E Huerta-Sánchez*†, **M DeGiorgio*†**, L Pagani*, A Tarekegn, R Ekong, T Antao, A Cardona, HE Montgomery, GL Cavalleri, PA Robbins, ME Weale, N Bradman, E Bekele, T Kivisild, C Tyler-Smith, R Nielsen (2013) Genetic signatures reveal high-altitude adaptation in a set of Ethiopian populations. *Molecular Biology and Evolution* 30:1877-1888.

6. **M DeGiorgio†**, NA Rosenberg (2013) Geographic sampling scheme as a determinant of the major axis of genetic variation in principal components analysis. *Molecular Biology and Evolution* 30:480-488.

5. **M DeGiorgio†**, JH Degnan, NA Rosenberg (2011) Coalescence-time distributions in a serial founder model of human evolutionary history. *Genetics* 189:579-593.

4. **M DeGiorgio*†**, I Jankovic*, NA Rosenberg (2010) Unbiased estimation of gene diversity in samples containing related individuals: exact variance and arbitrary ploidy. *Genetics* 186:1367-1387.

3. **M DeGiorgio†**, JH Degnan (2010) Fast and consistent estimation of species trees using supermatrix rooted triples. *Molecular Biology and Evolution* 27:552-569.

2. **M DeGiorgio**, M Jakobsson, NA Rosenberg (2009) Explaining worldwide patterns of human genetic variation using a coalescent-based serial founder model of migration outward from Africa. *Proceedings of the National Academy of Sciences of the United States of America* 106:16057-16062.

1. **M DeGiorgio†**, NA Rosenberg (2009) An unbiased estimator of gene diversity in samples containing related individuals. *Molecular Biology and Evolution* 26:501-512.

AS A CONTRIBUTING AUTHOR

27. M Duncan, **M DeGiorgio**, R Assis†, R Adams†. Robust regression rescues poor phylogenetic decisions. *BMC Ecology and Evolution* (accepted).

26. M Lopolo*, C Avanzi*, S Duchene, P Luisi, A de Flamingh, G Yaxal Ponce-Soto, G Tressieres, S Neumeyer, F Lemoine, EA Nelson, M Iraeta-Orbegozo, JS Cybulski, J Mitchell, VT Marks, LB Adams, J Lindo, **M DeGiorgio**, N Ortiz, C Wiens, J Hiebert, A Bonifaz, G Montes de Oca, V Paredes-Solis, C Franco-Paredes, L Vera-Cabrera, JG Pereira Brunelli, M Jackson, JS Spencer, CG Salgado, X-Y Han, CM Pearce, AK Warren, PS Rosa, AJ de Finardi, A de FF Belone, C Ferreira, PN Suffys, AN Brum Fontes, SEG Vasconcellos, R Schaub, P Couppié, K Drak Alsibai, R Hernández-Castro, M Silva Miranda, I Estrada-Garcia, F Jurado-Santacruz, L Orlando, H Schroeder, L Quinata-Murci, M Del Papa, R Lahiri, RS Malhi, S Rasmussen, N Rascovan† (2025) Pre-European contact leprosy in the Americas and its current persistence. *Science* 389:eadu7144.

25. JR Lozano, M Duncan, DD McKenna, T Castoe, **M DeGiorgio**, RH Adams† (2025) *TraitTrainR*: Accelerating large-scale simulation under models of trait evolution. *Bioinformatics Advances* 5:vbae196.

24. AA Piya, **M DeGiorgio**, R Assis† (2023) Predicting expression divergence between single-copy orthologs in two species. *Genome Biology and Evolution* 15:evad078.

23. S Joseph, A Achilli, N Migliore, A Olivieri, A Torroni, A Owings, **M DeGiorgio**, WG Ordóñez, JJO Aguilú, F González-

Andrade†, J Lindo† (2023) Genomic evidence for adaptation to tuberculosis in the Andes before European contact. *iScience* 26:106034.

22. DR Schield†, BW Perry, **RH Adams**, ML Holding, ZL Nikolakis, SS Gopalan, CF Smith, JM Parker, JM Meik, **M DeGiorgio**, SP Mackessy, TA Castoe† (2022) The roles of balancing selection and recombination in the evolution of rattlesnake venom. *Nature Ecology and Evolution* 6:1367-1380.

21. J Lindo†, R De La Rosa, **AL Campelo dos Santos**, M Sans, **M DeGiorgio**, G Figueiro† (2022) The genomic prehistory of the Indigenous people of Uruguay. *PNAS Nexus* 1:pgac047.

20. AL Severson, BF Byrd, EK Mallott, A Owings, **M DeGiorgio**, A de Flamingh, C Nijmeh, MV Arellano, A Leventhal, NA Rosenberg†, RS Malhi† (2022). Ancient and modern genomics of the Ohlone Indigenous population in California. *Proceedings of the National Academy of Sciences of the USA* 119:e2111533119.

19. W Guiblet, **M DeGiorgio**, **X Cheng**, F Chiaromonte, K Eckert, Y-F Huang†, KD Makova† (2021) Selection and thermostability suggest G-quadruplexes are novel functional elements of the human genome. *Genome Research* 31:1136-1149.

18. D Wu, J Dou, X Chai, C Bellis, A Wilm, CC Shih, WWJ Soon, N Bertin, CB Lin, CC Khor, **M DeGiorgio**, S Cheng, L Bao, N Karmani, WYK Hwang, S Davila, P Tan, A Shabbir, A Moh, E-K Tan, JN Foo, LL Goh, KP Leong, RSY Foo, CSP Lam, AM Richards, C-Y Cheng, T Aung, TY Wong, HK Ng, SG10K Consortium (2019) Large-scale whole-genome sequencing of three diverse Asian populations in Singapore. *Cell* 3:736-749.

17. H Mei, B Arbeithuber, MA Cremona, **M DeGiorgio**, A Nekrutenko (2019) A high-resolution view of adaptive event dynamics in a plasmid. *Genome Biology and* Evolution 11:3022-3034.

16. D Ye, AA Zaidi, M Tomaszkiewicz, C Liebowitz, **M DeGiorgio**, MD Shriver, KD Makova (2018) High levels of copy number variation of ampliconic genes across major human Y haplogroups. *Genome Biology and Evolution* 10:1333-1350.

15. D Xu, P Pavlidis, RO Taskent, N Alachiotis, C Flanagan, **M DeGiorgio**, R Blekhman, S Ruhl, O Gokcumen (2017) Archaic hominin introgression in Africa contributes to functional salivary *MUC7* genetic variation. *Molecular Biology and Evolution.* 34:2704-2715.

14. L Pagani, DJ Lawson, E Jagoda, A Mörseburg, A Eriksson, M Mitt, F Clemente, G Hudjashov, **M DeGiorgio**, L Saag, JD Wall, A Cardona, R Mägi, MA Wilson Sayres, S Kaewert, C Inchley, CL Scheib, M Järve, M Karmin, GS Jacobs, T Antao, FM Iliescu, A Kushniarevich, Q Ayub, C Tyler-Smith, Y Xue, B Yunusbayev, K Tambets, CB Mallick, L Saag, E Pocheshkhova, G Andriadze, C Muller, MC Westaway, DM Lambert, G Zoraqi, S Turdikulova, D Dalimova, Z Sabitov, GNN Sultana, J Lachance, S Tishkoff, K Momynaliev, J Isakova, LD Damba, M Gubina, P Nymadawa, I Evseeva, L Atramentova, O Utevska, F-X Ricaut, N Brucato, H Sudoyo, T Letellier, MP Cox, NA Barashkov, V Skaro, L Mulahasanovic, D Primorac, H Sahakyan, M Mormina, CA Eichstaedt, DV Lichman, S Abdullah, G Chaubey, JTS Wee, E Mihailov, A Karunas, S Litvinov, R Khusainova, N Ekomasova, V Akhmetova, I Khidiyatova, D Marjanović, L Yepiskoposyan, DM Behar, E Balanovska, A Metspalu, M Derenko, B Malyarchuk, M Voevoda, SA Fedorova, LP Osipova, MM Lahr, P Gerbault, M Leavesley, AB Migliano, M Petraglia, O Balanovsky, EK Khusnutdinova, E Metspalu, MG Thomas, A Manica, R Nielsen, R Villems, E Willerslev, T Kivisild, M Metspalu (2016) Genomic analyses inform on migration events during the peopling of Eurasia. *Nature* 538:238-242.

13. CD Huber, **M DeGiorgio**, I Hellmann, R Nielsen (2016) Detecting recent selective sweeps while controlling for mutation rate and background selection. *Molecular Ecology* 25:142-156.

12. M Karmin, L Saag, M Vicente, MA Wilson Sayres, M Järve, U Gerst Talas, S Rootsi, A-M Ilumäe, R Mägi, M Mitt, L Pagani, T Puurand, Z Faltyskova, F Clemente, A Cardona, E Metspalu, H Sahakyan, B Yunusbayev, G Hudjashov, **M DeGiorgio**, E-L Loogväli, C Eichstaedt, M Eelmets, G Chaubey, K Tambets, S Litvinov, M Mormina, Y Xue, Q Ayub, G Zoraqi, T Sand Korneliussen, F Akhatova, J Lachance, S Tishkoff, K Momynaliev, F-X Ricaut, P Kusuma, H Razafindrazaka, D Pierron, MP Cox, G Nurun N Sultana, R Willerslev, C Muller, M Westaway, D Lambert, V Skaro, L Kovačević, S Turdikulova, D Dalimova, R Khusainova, N Trofimova, V Akhmetova, I Khidiyatova, DV Lichman, J Isakova, E Pocheshkhova, Z Sabitov, NA Barashkov, P Nymadawa, E Mihailov, J Wee Tien Seng, I Evseeva, A Bamberg Migliano, S Abdullah, G Andriadze, D Primorac, L Atramentova, O Utevska, L Yepiskoposyan, D Marjanović, A Kushniarevich, DM Behar, C Gilissen, L Vissers, J Veltman, E Balanovska, M Derenko, B Malyarchuk, A Metspalu, Sa

Fedorova, A Eriksson, A Manica, F Mendez, TM Karafet, K Veeramah, N Bradman, M Hammer, LP Osipova, O Balanovsky, EK Khusnutdinova, K Johnsen, M Remm, MG Thomas, C Tyler-Smith, PA Underhill, E Willerslev, R Nielsen, M Metspalu, R Villems, T Kivisild (2015) A recent bottleneck of Y chromosome diversity coincides with a global change in culture. *Genome Research* 24:459-466.

11. L Bao, D Elleder, R Malhotra, **M DeGiorgio**, T Maravegias, D Hunter, M Poss (2014) Computational and statistical analyses of insertional polymorphic endogenous retroviruses in a non-model organism. *Computation* 2:221-245.

10. FJ Clemente, A Cardona, CE Inchley, BM Peter, G Jacobs, L Pagani, DJ Lawson, T Antão, M Vicente, M Mitt, **M DeGiorgio**, Z Faltyskova, Y Xue, Q Ayub, M Szpak, R Mägi, A Eriksson, A Manica, M Raghavan, M Rasmussen, S Rasmussen, E Willerslev, A Vidal-Puig, C Tyler-Smith, R Villems, R Nielsen, M Metspalu, B Malyarchuk, M Derenko, T Kivisild (2014) A selective sweep on a deleterious mutation in *CPT1A* Arctic populations. *American Journal of Human Genetics* 95:584-589.

9. A-S Malaspinas, O Lao, H Schroeder, M Rasmussen, M Raghavan, I Moltke, PF Campos, VF Gonçalves, S Rasmussen, F Santana Sagredo, A Albrechtsen, ME Allentoft, PLF Johnson, M Li, S Reis, DV Bernardo, **M DeGiorgio**, A Duggan, M Bastos, Y Wang, J Stenderup, S Brunak, T Sicheritz-Ponten, L Orlando, TD Price, R Nielsen, JD Jensen, J Heinemeier, J Olsen, C Rodrigues-Carvalho, M Mirazón Lahr, M Neves, M Kayser, T Higham, M Stoneking, SDJ Pena, E Willerslev (2014) Two ancient human genomes reveal Polynesian ancestry among the indigenous Botocudos of Brazil. *Current Biology* 24:R1035-R1037.

8. M Raghavan, **M DeGiorgio**, A Albrechtsen, I Moltke, P Skoglund, TS Korneliussen, B Gronnøw, HC Gulløv, M Friesen, W Fitzhugh, H Malmström, S Rasmussen, J Olsen, L Melchior, BT Fuller, SM Fahrni, T Stafford Jr, V Grimes, MAP Renouf, J Cybulski, N Lynnerup, MM Lahr, K Britton, R Knecht, J Arneborg, M Metspalu, OE Cornejo, A-S Malaspinas, Y Wang, M Rasmussen, V Raghavan, TVO Hansen, E Khusnutdinova, T Pierre, K Dneprovski, C Andreason, H Lange, MG Hayes, J Coltrain, VA Spitsyn, A Götherström, L Orlando, T Kivisild, R Villems, M Crawford, FC Nielsen, J Dissing, J Heinemeier, M Meldgaard, C Bustamante, DH O'Rourke, M Jakobsson, MTP Gilbert, R Nielsen, E Willerslev (2014) The genetic prehistory of the New World Arctic. *Science* 345: doi:10.10.1126/science.1255832.

7. A-S Malaspinas, O Tange, JV Moreno-Mayar, M Rasmussen, **M DeGiorgio**, Y Wang, CE Valdiosera, G Politis, E Willerslev, R Nielsen (2014) *bammds*: A tool for assessing the ancestry of low depth whole genome data using multidimensional scaling (MDS). *Bioinformatics* 30:2962-2964.

6. I Olalde, ME Allentoft, F Sánchez-Quinto, G Santpere, CWK Chiang, **M DeGiorgio**, J Prado-Martínez, JA Rodríguez, S Rasmussen, J Quilez, O Ramírez, M Fernández, ME Prada, JMV Encinas, R Nielsen, MG Netea, J Novembre, RA Sturm, P Sabeti, T Marquès-Bonet, A Navarro, E Willerslev, C Lalueza-Fox (2014) Derived immune and ancestral pigmentation alleles in a 7,000-year-old Mesolithic European. *Nature* 507:225-228.

5. M Rasmussen, SL Anzick, MR Waters, P Skoglund, **M DeGiorgio**, TW Stafford Jr, S Rasmussen, I Moltke, A Albrechtsen, SM Doyle, GD Poznik, V Gudmundsdottir, R Yadav, A-S Malaspinas, SS White V, M Allentoft, OE Cornejo, K Tambets, A Eriksson, P Heintzman, M Meiri, M Karmin, T Sand Korneliussen, TL Pierre, J Stenderup, L Saag, V Warmuth, M Cabrita Lopes, S Brunak, T Sicheritz-Ponten, I Barnes, M Collins, L Orlando, F Balloux, A Manica, M Metspalu, CD Bustamante, M Jakobsson, R Gupta, R Nielsen, E Willerslev (2014) The genome of a late Pleistocene human found at a Clovis burial site in western Montana. *Nature* 506:225-229.

4. M Raghavan, P Skogland, K Graf, M Metspalu, A Albrechtsen, I Moltke, S Rasmussen, T Stafford Jr, L Orlando, E Metspalu, M Karmin, K Tambets, S Rootsi, R Mägi, PF Campos, E Balanovska, O Balanovsky, E Khusnutdinova, S Litvinov, LP Osipova, SA Federova, MI Voevoda, **M DeGiorgio**, T Sicheritz-Ponten, S Brunak, S Demeshchenko, T Kivisild, R Villems, R Nielsen, M Jakobsson, E Willerslev (2014) Upper Paleolithic Siberian genome reveals dual ancestry of Native Americans. *Nature* 505:87-91.

3. KE Lohmueller, T Sparsø, Q Li, E Andersson, T Korneliussen, A Albrechtsen, K Banasik, N Grarup, I Hallgrimsdottir, K Kill, TO Kilpeläinen, N Krarup, TH Pers, G Sanchez, Y Hu, **M DeGiorgio**, T Jørgensen, A Sandbæk, T Lauritzen, S Brunak, K Kristiansen, Y Li, T Hansen, J Wang, R Nielsen, O Pedersen (2013) Whole exome sequencing of 2,000 Danish individuals and the role of low-frequency coding variants in type 2 diabetes. *American Journal of Human Genetics* 93:1072-1086.

2. TJ Pemberton, **M DeGiorgio**, NA Rosenberg (2013) Population structure in a comprehensive data set on human

microsatellite variation. *G3: Genes, Genomes, Genetics* 3:909-916.

1. JH Degnan, **M DeGiorgio**, D Bryant, NA Rosenberg (2009) Properties of consensus methods for inferring species trees from gene trees. *Systematic Biology* 58:35-54.

SOFTWARE (GITHUB HTTPS://GITHUB.COM/MDEGIORGIO)

SKINET (Support vector Kernel for Inferring Natural selection and Evolutionary Target detection)

A Python program that implements the novel trend-filtered support vector classifier *SKINET* of Amin *et al*. (*submitted*) for detecting adaptive regions while modeling the structure within images of genomic variation.

PULSe (Positive-Unlabeled Learning for SElection detection)

A Python program that implements the semi-supervised classifier *PULSe* of Arnab *et al*. (*submitted*) for identifying adaptive genomic loci under settings of demographic uncertainty

ANDES (ANomaly DEtection using Summary statistics)

A program that implements the anomaly detection model *ANDES* of Kanjilal *et al*. (2025) for uncovering aberrant genomic regions by modeling genomic autocovariation with functional data analysis.

TrIdent (TRansfer learning for IDENTification of adaptation)

A Python program that implements the classifier and predictor *TrIdent* of Arnab *et al*. (2025) for identifying and characterizing adaptive regions through transfer learning from haplotype alignment images.

α*-DAWG* (α-molecules for Detecting Adaptive Windows in Genomes)

A Python program that implements the classifier α*-DAWG* of Amin *et al*. (2024) for identifying adaptive genomic windows through α-molecule basis expansion haplotype alignment images.

CLOUDe (CLassification using Ornstein-Uhlenbeck of Deletions)

An R program that implements the suite of machine learning methods *CLOUDe* of Campelo dos Santos *et al*. (2024) for predicting evolutionary targets of gene deletion events from expression data in two species.

ROBRT (ROBust Regression on Trees)

An R program that estimates trait association on phylogenetic trees using the robust L1, M, S, and MM phylogenetic independent contrast regression estimators of Adams *et al*. (2023).

T-REx (Tensor decomposition-based Robust feature Extraction and classification)

A Python program that implements the classifier *T-REx* of Amin *et al*. (2023) for identifying adaptive regions through tensor decomposition of images of haplotype alignments.

SISSSCO (Spectral Inference of Summary Statistic Signals using COnvolutional neural networks)

A Python program that implements the classifier *SISSSCO* of Arnab *et al*. (2023) for identifying adaptive regions through spectral analysis of summary statistic signals.

SpeciesTopoTestR

An R program that computes the KH*, SH*, and SOWH* likelihood tests of species topology hypotheses of Adams and DeGiorgio (2023).

LASSI-Plus

A C++ program that implements the likelihood ratio Λ statistic of DeGiorgio and Szpiech (2022) for detecting selective sweeps and inferring their softness using the spatial distribution of distortions in the haplotype frequency spectrum.

BalLeRMix+

A Python program that can simultaneously perform genomic scans of positive selection and long-term balancing selection using the composite likelihood ratio *B* statistics of Cheng and DeGiorgio (2022).

funbiased

A Python program that computes the F_2, F_3, normalized F_3, and normalized F_4 statistics of Mughal and DeGiorgio (2021).

PRDATR (Probabilistic Distances under models of Adaptive Trait evolution in R)

An R program that computes the probabilistic distances between phylogenetic models of continuous trait evolution of Adams *et al*. (2021).

PhyloWGA

An R program for performing chromosome-aware phylogenetic interrogation of whole genome alignments of Adams *et al*. (2021).

CLOUD (CLassification using Ornstein-Uhlenbeck of Duplicates)

An R program that implements the multi-layer neural network method *CLOUD* of DeGiorgio and Assis (2021) for classifying duplicate gene retention mechanisms and predicting their evolutionary parameters from gene expression data in two species.

SURFDAWave (Sweep inference Using Regularized FDA with WAVElets)

An R program that implements the classifier and predictor *SURFDAWave* of Mughal *et al*. (2020) for identifying adaptive targets and learning their evolutionary parameters using the spatial distribution of summary statistics around a test site.

VolcanoFinder

A C program that can perform genomic scans for adaptive introgression using the composite likelihood ratio test of Setter *et al*. (2020).

BalLeRMix (BALancing selection LikElihood Ratio MIXture models)

A Python program that can perform genomic scans for balancing selection using the composite likelihood ratio *B* statistics of Cheng and DeGiorgio (2020).

LASSI (Likelihood-based Approach for Selective Sweep Inference)

A Python program that implements the likelihood ratio *T* statistic of Harris and DeGiorgio (2020) for detecting selective sweeps and inferring their softness.

SS-X12

A Python program that implements the classifier SS-H12 of Harris and DeGiorgio (2020) for detecting shared selective sweeps, and classifying them as ancestral or convergent, as well as hard or soft.

TASTI (Taxa with Ancestral structure Species Tree Inference)

An R program that implements the maximum likelihood estimator of species trees in the presence of ancestral population structure of Koch and DeGiorgio (2020).

Trendsetter

A Python program that implements the classifier *Trendsetter* of Mughal and DeGiorgio (2019) for classifying genomic regions as neutral, hard sweeps, or soft sweeps using the spatial distribution of summary statistics around test sites.

MULLET (MULti-species LikElihood Tests)

A C program that can perform scans for ancient multi-species balancing selection in the absence of trans-species

polymorphism using the composite likelihood ratio tests of Cheng and DeGiorgio (2019).

MuteBaSS (MUlTi-spEcies Balancing Selection Summaries)

A Python program that computes multi-species variants of HKA and NCD for detecting long-term balancing selection from Cheng and DeGiorgio (2019).

CalcABS

A Python program that computes the ancestral branch statistic (ABS) for detecting ancestral selective sweeps of Cheng *et al*. (2017).

BestHet

An R program that computes the unbiased estimator of expected heterozygosity of Harris and DeGiorgio (2017) at a locus, as well as F_{ST} and the locus-specific branch length, which are functions of expected heterozygosity.

SweepFinder2

A C program that can perform genomic scans for recent selective sweeps while controlling for background selection and mutation rate variation using the composite likelihood ratio tests of Huber *et al*. (2016) and DeGiorgio *et al*. (2016).

BALLET (BALancing selection LikElihood Test)

A C program that performs genomic scans for balancing selection using the composite likelihood ratio tests of DeGiorgio *et al*. (2014).

INVITED DEPARTMENTAL AND CONFERENCE TALKS

32. Efficient detection and characterization of targets of natural selection using transfer learning. *Probabilistic Modeling in Genomics* (2025).
31. Enhancing detection and characterization of adaptation from genomic variation. *Department of Computer Science at the University of Central Florida* (2025).
30. Feature generation strategies for improving predictive models of adaptation. *EvoGenomics.AI* (2023).
29. Feature generation strategies for improving predictive models of adaptation. *Center for Computational Biology and Bioinformatics at Pennsylvania State University* (2023).
28. Computational genomics of adaptation. *IEEE Palm Beach Section Tech Talks* (2021).
27. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Computer and Electrical Engineering and Computer Science at Florida Atlantic University* (2019).
26. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Anthropology and the Institute of Quantitative Theory and Methods at Emory University* (2019).
25. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Biology at the University of New Mexico* (2019).
24. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Computer Science at the University of Central Florida* (2018).
23. Fast and robust detection of ancestral selective sweeps. *Bioinformatics and Genomics Retreat at Pennsylvania State University* (2017).
22. Uncovering regions of ancestral positive selection with ancient and modern DNA. *Center for Medical Genomics at Pennsylvania State University* (2017).
21. Uncovering regions of ancestral positive selection with ancient and modern DNA. *Department of Biology at San Francisco State University* (2017).

20. Uncovering regions of ancestral positive selection with ancient and modern DNA. *Mathematical Biology Research Group at the University of California, Merced* (2017).
19. Adaptive maintenance of ancient alleles: likelihood approaches for detecting balancing selection. *American Association of Physical Anthropologists* (2016).
18. Statistical techniques for identifying adaptive alleles with an application to human evolution. *Center for Computational Molecular Biology at Brown University* (2015).
17. Statistical techniques for identifying adaptive alleles with an application to human evolution. *Department of Natural Resources and Environmental Sciences at the University of Illinois, Urbana-Champaign* (2015).
16. Statistical techniques for identifying adaptive alleles with an application to human evolution. *School of Biological Sciences at Washington State University* (2015).
15. Composite likelihood methods for detecting natural selection. *Bioinformatics Program at the University of California, Los Angeles* (2014).
14. Composite likelihood ratio tests for detecting natural selection. *Department of Mathematics at Pennsylvania State University* (2014).
13. Composite likelihood methods for detecting natural selection. *Department of Statistics at Pennsylvania State University* (2014).
12. A likelihood-based approach for detecting selective sweeps. *Bioinformatics and Genomics Retreat at Pennsylvania State University* (2014).
11. Methods for detecting adaptation while accounting for evolutionary relationships. *Computational and Statistical Genomics Workshop at Pennsylvania State University* (2013).
10. Using models of evolutionary history to understand human genetic variation. *Institute for CyberScience and Department of Biology at Pennsylvania State University* (2013).
9. Using models of evolutionary history to understand human genetic variation. *Departments of Biostatistics and Human Genetics at the University of Michigan* (2013).
8. Using models of evolutionary history to understand human genetic variation. *Bioinformatics Program at Boston University* (2013).
7. Using models of evolutionary history to understand human genetic variation. *Department of Biological Sciences at the University of Alabama* (2013).
6. Using models of evolutionary history to understand human genetic variation. *Departments of Biology and Mathematics at the University of Oregon* (2013).
5. Using models of evolutionary history to understand human genetic variation. *Department of Biological Statistics and Computational Biology at Cornell University* (2013).
4. Using models of evolutionary history to understand human genetic variation. *BioFrontiers Institute at the University of Colorado, Boulder* (2013).
3. Altitude adaptation in Ethiopia: the effect of admixture. *High Altitude and Cold Meeting at the University of Cambridge* (2012).
2. Genetic variation and modern human origins. *NIMBioS at the University of Tennessee* (2012).
1. Explaining worldwide patterns of human genetic variation using a coalescent-based serial founder model of migration outward from Africa. *University of Canterbury* (2010).

CONTRIBUTED CONFERENCE TALKS

BOLD INDICATES GROUP MEMBER

12. **MR Amin**, **M DeGiorgio** (2025) Trend-filtered support vector machine to detect natural selection from genomic autocovariation. *Congress of the European Society for Evolutionary Biology.* **[Presented by group member]**
11. **AL Campelo dos Santos**, **M DeGiorgio**, R Assis (2023) Predicting evolutionary targets and parameters of gene deletion from expression data. *Evolution.* **[Presented by group member]**
10. **SP Arnab**, **M DeGiorgio** (2022) Uncovering footprints of natural selection through time-frequency analysis of genomic summary statistics. *Population, Evolutionary and Quantitative Genetics.* **[Presented by group member]**
9. **MR Mughal**, **H Koch**, **J Huang**, F Chiaramonte, **M DeGiorgio** (2020) Learning the properties of adaptive regions with functional data analysis. *The Allied Genetics Conference.* **[Presented by group member]**
8. **MR Mughal**, **H Koch**, **J Huang**, F Chiaramonte, **M DeGiorgio** (2019) Learning the properties of adaptive regions with functional data analysis. *Genome Informatics.* **[Presented by group member]**
7. **X Cheng, M DeGiorgio** (2019) Robust and window-insensitive mixture model approaches for localizing balancing selection. *Evolution.* **[Presented by group member]**
6. **AM Harris, M DeGiorgio** (2019) A likelihood approach for uncovering selective sweep signatures from haplotype data. *Evolution.* **[Presented by group member]**
5. **X Cheng, M DeGiorgio** (2018) Detection of shared balancing selection in the absence of trans-species polymorphism. *Population, Evolutionary and Quantitative Genetics.* **[Presented by group member]**
4. **M DeGiorgio**, KE Lohmueller, R Nielsen (2014) A model-based approach for identifying signatures of ancient balancing selection in genetic data. *Society for Molecular Biology and Evolution.*
3. **M DeGiorgio**, KE Lohmueller, R Nielsen (2012) Balancing selection in the human genome. *1000 Genomes Project Community Meeting.*
2. **M DeGiorgio**, JH Degnan, NA Rosenberg (2010) Coalescence-time distributions in a serial founder model of human evolutionary history. *American Society of Human Genetics.*
1. **M DeGiorgio**, M Jakobsson, NA Rosenberg (2009) Explaining worldwide patterns of human genetic variation using a coalescent-based serial founder model of migration outward from Africa. *American Society of Human Genetics.*

CURRENT GROUP MEMBERS

FLORIDA ATLANTIC UNIVERSITY

Zach Cohen, Postdoctoral researcher (joint with Raquel Assis)	09/2025 – Present
Cindy Gilda Santander, Postdoctoral researcher	01/2025 – Present
Wayne Cole, Computer Science Ph.D. student	01/2025 – Present
Manisha Karim, Computer Science Ph.D. student	01/2024 – Present
Mohammad Khan, Computer Science Ph.D. student	01/2024 – Present
Ruhul Amin, Computer Science Ph.D. student	01/2021 – Present
Sandipan Arnab, Computer Engineering Ph.D. student	01/2021 – Present

PAST GROUP MEMBERS

FLORIDA ATLANTIC UNIVERSITY

Andre Luiz Campelo dos Santos, Postdoc and Research Scientist (joint with Raquel Assis)	10/2021 – 07/2025
Ria Kanjilal, Postdoctoral researcher (jointly advised by Raquel Assis)	07/2022 – 08/2024
Garrett Reardon, Artificial Intelligence M.S. student	08/2023 – 03/2024
Fakir Mahmudul Hasan, Electrical Engineering Ph.D. student	05/2021 – 08/2023
Nafis Erfan, Computer Science Ph.D. student (jointly advised by Raquel Assis)	09/2022 – 05/2023
Sudhanshu Sharma, Computer Science Ph.D. student	01/2021 – 08/2022

Kamal Choudhary, Computer Science Ph.D. student	10/2020 – 08/2022
Ernest Guagliata, Computer Science M.S. student	12/2020 – 05/2022
Priya Sigler, Artificial Intelligence M.S. student and Data analyst	08/2020 – 04/2022
Richard Adams, Postdoctoral researcher	08/2019 – 08/2021
Kuumba Adesunloye, Computer Science Ph.D. student	09/2020 – 02/2021

PENNSYLVANIA STATE UNIVERSITY

Mehreen Mughal, Bioinformatics and Genomics Ph.D. student	04/2017 – 09/2020
Alexandre Harris, Molecular Cellular and Integrative Biosciences Ph.D. student	01/2016 – 08/2020
Xiaoheng Cheng, Molecular Cellular and Integrative Biosciences Ph.D. student	01/2016 – 08/2020
Jinguo Huang, Bioinformatics and Genomics Ph.D. student	05/2019 – 12/2019
Hillary Koch, Statistics Ph.D. student	06/2016 – 05/2017
Carlos Prada, Biology postdoctoral fellow (jointly advised by Monica Medina)	10/2014 – 04/2016
Michelle S. Kim, Biology B.S. student	05/2014 – 04/2016
Cheng Xu, Molecular Cellular and Integrative Biosciences rotation student	11/2015 – 12/2015
Matthew J. Schneider, Biology B.S. student	09/2014 – 12/2015
Divya Jagadeesh, Mathematics B.S. student	10/2014 – 12/2014
Joseph M. Gardner, Physics B.S. student	05/2014 – 05/2015
Ashley N. Hall, Mathematics B.S. student	06/2014 – 12/2014

TEACHING

FLORIDA ATLANTIC UNIVERSITY

CAP 4773: Introduction to Data Science and Analytics	08/2025 – Present
CAP 5768: Introduction to Data Science	03/2024 – 05/2024
	01/2023 – 05/2023
	01/2021 – 05/2021
	08/2020 – 09/2020
	01/2020 – 05/2020
CAP 5625: Computational Foundations of Artificial Intelligence	08/2024 – 12/2024
	08/2023 – 12/2023
	01/2023 – 05/2023
	08/2022 – 12/2022
	08/2021 – 12/2021
	08/2020 – 12/2020
	08/2019 – 12/2019

PENNSYLVANIA STATE UNIVERSITY

BIOL 428: Population Genetics	01/2019 – 04/2019
	01/2018 – 04/2018
	01/2017 – 04/2017
	01/2016 – 04/2016
	01/2015 – 04/2015
BIOL 422: Advanced Genetics	08/2018 – 12/2018
	08/2016 – 12/2016
BIOL 220W: Populations and Communities	01/2015 – 04/2015
BMMB 551: Genomics, Human population structure guest lecture	11/2014, 11/2015
BMMB 554: Bioinformatics 1, GWAS guest lecture	03/2014

UNIVERSITY OF CALIFORNIA, BERKELEY

IB 87: Introduction to Research Methods in Biology, HIV evolution guest lecture 07/2012, 07/2013

PROFESSIONAL DEVELOPMENT

FLORIDA ATLANTIC UNIVERSITY

Institute for Academic Leadership Department Chairs Workshop Fall 2025
Team for Assurance of Student Learning Workshop Fall 2025
Cheaters Never Win Workshop Fall 2022

PENNSYLVANIA STATE UNIVERSITY

Evidence-Based Teaching Academy, Center for Excellence in Science Education Summer 2019

DEPARTMENTAL AND UNIVERSITY COMMITTEES

FLORIDA ATLANTIC UNIVERSITY

Artificial Intelligence Task Force 2024 – Present
Chair of Accreditation Committee, Department of Electrical Engineering and Computer Science 2023 – Present
Senator, University Faculty Senate 2022 – Present
Chair of Faculty Search Committee, Department of Electrical Engineering and Computer Science 2023 – 2025
Chair of Student Outreach Committee, Department of Electrical Engineering and Computer Science 2021 – 2024
Faculty Search Committee, Department of Electrical Engineering and Computer Science 2021 – 2023
2019 – 2020
Curriculum Reform Committee, Department of Computer & Electrical Engineering and Computer Science 2021
Open House Planning Committee, Department of Computer & Electrical Engineering and Computer Science 2019

PENNSYLVANIA STATE UNIVERSITY

Coordinating Committee, Institute for Computational and Data Sciences 2018 – 2019
Computer Resources Committee, Department of Biology 2017 – 2019
2015 – 2016
Graduate Awards Committee, Department of Biology 2016 – 2019
Seminar Committee, Department of Biology 2015 – 2019
Evolutionary Genomics Faculty Search Committee, Department of Biology 2017 – 2018

DOCTORAL DISSERTATION COMMITTEES

FLORIDA ATLANTIC UNIVERSITY

Vishnu Vardhan Reddy Chinta, Computer Science 08/2025 – Present
Muhammad Asfand Hafeez, Computer Science 04/2025 – Present
Hayat Ullah, Computer Science 11/2024 – Present
Tsehao Hsu, Computer Science 11/2024 – Present
Richard Acs, Computer Science 06/2024 – Present
Matthew Acs, Computer Science 06/2024 – Present
Perry LaBoone, Computer Science 04/2024 – Present
Parisa Nategh Mohammadzamanbeigi, Electrical Engineering 04/2024 – Present
Peter Worth, Computer Science 01/2024 – Present
Yiran Pang, Computer Science 12/2023 – Present
Antara Anika Piya, Computer Science 05/2023 – Present
Natasha Petrovska, Computer Engineering 08/2022 – Present

Hamid Asefi-Ghamari, Electrical Engineering	12/2020 – Present
Mostapha Al-Saidi, Computer Science	08/2021 – 04/2025
Magdalyn Elkin, Computer Science	12/2020 – 04/2025
Mustafa Shuqair, Electrical Engineering	04/2021 – 12/2024
Fanchen Bao, Computer Science	12/2020 – 12/2023
Mahsa Alemrajabi Firouzabad, Physics	05/2020 – 12/2022
Anak Wannaphaschaiyong, Computer Science	12/2019 – 11/2022

PENNSYLVANIA STATE UNIVERSITY

Guanjue Xiang, Bioinformatics and Genomics	01/2018 – 09/2020
Cory Henderson, Molecular Cellular and Integrative Biosciences	02/2019 – 08/2020
Han Mei, Biochemistry Microbiology and Molecular Biology	09/2018 – 08/2020
Victoria DeLeo, Plant Biology	01/2018 – 08/2020
Nicholas Stoler, Bioinformatics and Genomics	11/2015 – 08/2020
Rahulsimham Vegesna, Bioinformatics and Genomics	12/2018 – 01/2020
Xueyuan Jiang, Molecular Cellular and Integrative Biosciences	03/2017 – 06/2019
Chen Sun, Computer Science and Engineering	08/2016 – 08/2018
Boris E. Rebolledo Jaramillo, Bioinformatics and Genomics	05/2014 – 05/2016

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

John Lindo, Department of Anthropology	09/2014 – 07/2015

MASTERS THESIS COMMITTEES

FLORIDA ATLANTIC UNIVERSITY

John Renne, Artificial Intelligence	03/2025 – Present
David Shvimer, Artificial Intelligence	05/2023 – 12/2024
Danica Blazanovic, Artificial Intelligence	09/2022 – 05/2023
Nicholas Gacharich, Computer Science	03/2021 – 05/2021

OTHER DEPARTMENTAL, COLLEGE, AND UNIVERSITY SERVICE

FLORIDA ATLANTIC UNIVERSITY

Qualifying Examination Proctor, Department of Computer & Electrical Engineering and Computer Science	12/2021 12/2019
Commencement Ceremony Reader, College of Engineering and Computer Science	12/2019

PENNSYLVANIA STATE UNIVERSITY

Poster Judge for ICDS Symposium, Institute for Computational and Data Sciences	Spring 2019
Peer Evaluator for BIOL 406, Department of Biology	Spring 2019
Poster Judge for ICDS Symposium, Institute for Computational and Data Sciences	Spring 2018
Candidacy Exam Evaluation Committee, Molecular, Cellular, and Integrative Biosciences	Spring 2017 Spring 2016
Peer Evaluator for BIOL 133, Department of Biology	Spring 2017
Poster Judge during Institute Day, Institute for Computational and Data Sciences	Spring 2019
Peer Evaluator for BIOL 230W, Department of Biology	Fall 2015
Peer Evaluator for BIOL 464, Department of Biology	Fall 2014

WORKSHOPS AND OUTREACH

I-DeepLearn Summer Workshop for High Schoolers	2021 – 2024
Introduction to Research, Florida Atlantic University High School	11/2021
Summer internship for INdigenous peoples in Genomics (SING)	2011 – 2019
Conservation Genomics Workshop, University of California, Los Angeles	03/2013
Advanced Biology, Berkeley High School	02/2012, 03/2013
Mathematical and Theoretical Biology Institute, Arizona State University	07/2009

CONFERENCE ORGANIZATION

Program Committee, IEEE International Conference on Machine Learning and Applications (ICMLA)	2025
Co-chair, Machine Learning in Genomics section at the *Probabilistic Modeling in Genomics* conference	2025
Program Committee, American Society of Human Genetics Annual Meeting	2016

JOURNAL EDITING

Senior Editor for *Bioinformatics Advances*	2025 – Present
Associate Editor for *Journal of Molecular Evolution*	2024 – Present
Associate Editor for *European Journal of Human Genetics*	2024 – Present
Associate Editor for *Bioinformatics Advances*	2024
Associate Editor for *IEEE/ACM Transactions on Computational Biology and Bioinformatics*	2020 – 2024
Guest Section Editor for *European Journal of Human Genetics*	2022 – 2023
Guest Associate Editor for *PLoS Genetics*	2018

JOURNAL PEER REVIEWING (64 DISTINCT JOURNALS)

Acta Biotheoretica, *Advanced Intelligent Systems*, *Advanced Science*, *American Journal of Human Biology*, *American Journal of Human Genetics, American Journal of Physical* Anthropology, *Annals of Human Biology*, *Applied Sciences*, *Bioinformatics*, *BioSystems*, *Blood*, *BMC Biology*, *BMC Ecology and Evolution*, *BMC Evolutionary Biology*, *BMC Genetics*, *BMC Genomics*, *Briefings in Bioinformatics*, *Cell*, *Cell Genomics*, *Communications Biology*, *Computers in Biology and Medicine*, *Current Biology*, *eLife*, *European Journal of Human Genetics*, *Evolution*, *Evolution Letters*, *Frontiers in Genetics*, *G3: Genes, Genomes, Genetics*, *Genetics*, *Genetics Research*, *Genome Biology and Evolution*, *Genome Medicine*, *Genome Research*, *Human Biology*, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, *iScience*, *Journal of Evolutionary Biology*, *Journal of Heredity*, *Journal of Mathematical Biology*, *Journal of Molecular Biology*, *Journal of Statistical Planning and Inference*, *Mammalian Genome*, *Molecular Biology and Evolution*, *Molecular Genetics and Genomics*, *Molecular Ecology*, *Molecular Ecology Resources*, *Nature*, *Nature Communications*, *Nature Ecology and Evolution*, *Nature Human Behavior*, *Nature Reviews Genetics*, *Pacific Symposium on Biocomputing*, *Philosophical Transactions of the Royal Society B-Biological Sciences*, *PLoS Genetics*, *PLoS One*, *Proceedings of the National Academy of Sciences of the United States of America*, *Proceedings of the Royal Society B-Biological Sciences*, *Science*, *Scientific Reports*, *Sensors*, *Statistical Applications in Genetics and Molecular Biology*, *Systematic Biology*, *Theoretical Population Biology*, *Yearbook of Biological Anthropology*

GRANT AND FELLOWSHIP PEER REVIEWING

Standing Member, National Institutes of Health NIGMS MRAF Study Section	2024 – Present
National Science Foundation DBI/TIP proposal panelist	2024
National Institutes of Health NIGMS R35 (MIRA ESI) proposal panelist	2023, 2024
National Science Foundation DEB proposal panelist	2016, 2022, 2024
National Institutes of Health NIGMS R35 (MIRA EI) proposal panelist (twice)	2023
National Science Foundation BCS Doctoral Dissertation Research proposals (*ad hoc*)	2020

National Science Foundation BCS proposals (*ad hoc*)	2020
Pennsylvania State University, Institute for Computational and Data Sciences seed grants	2017, 2018, 2019
Pennsylvania State University, Center for Human Evolution and Diversity seed grants	2016
Summer Internship for INdigenous peoples in Genomics (SING)	2013, 2014, 2015
Berkeley Biology Fellows Program	2012
Graduate Women in Science	2012

Michael DeGiorgio

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ACADEMIC APPOINTMENTS

Professor (tenured), Department of Electrical Engineering and Computer Science, Florida Atlantic University	08/2025 – Present
Associate Chair, Department of Electrical Engineering and Computer Science, Florida Atlantic University	08/2023 – Present
Affiliate Associate Professor, Department of Biomedical Engineering, Florida Atlantic University	08/2024 – Present
Affiliate Associate Professor, Department of Biological Sciences, Florida Atlantic University	04/2021 – Present
Member, Memorial Cancer Institute Florida Atlantic University Cancer Center of Excellence	05/2024 – Present
Member, Center for SMART Health, Florida Atlantic University	01/2024 – Present
Member, Institute for Human Health and Disease Intervention, Florida Atlantic University	01/2020 – Present
Associate Professor (tenured), Department of Electrical Engineering and Computer Science, Florida Atlantic University	08/2020 – 08/2025
Assistant Professor (tenure track), Department of Computer and Electrical Engineering and Computer Science, Florida Atlantic University	08/2019 – 08/2020
Associate Professor (tenured), Department of Biology, Pennsylvania State University	07/2019 – 08/2019
Assistant Professor (tenure track), Department of Biology, Pennsylvania State University	01/2014 – 07/2019
Affiliated Assistant Professor, Department of Statistics, Pennsylvania State University	11/2014 – 08/2019
Member, Center for Computational Biology and Bioinformatics, Pennsylvania State University	08/2017 – 08/2019
Member, Institute for Computational and Data Sciences, Pennsylvania State University	01/2014 – 08/2019
Member, Center for Medical Genomics, Pennsylvania State University	01/2014 – 08/2019
NSF Postdoctoral Fellow, Department of Integrative Biology, University of California, Berkeley	09/2011 – 12/2013

EDUCATION

University of Michigan, Ph.D., Bioinformatics	2011
University of Central Florida, B.S., Mathematics, *summa cum laude*	2006
University of Central Florida, B.S., Computer Science, *magna cum laude*	2006

DISTINCTIONS AND AWARDS

Distinguished Engineering Achievement award, The Engineers' Council	2024
Certificate of Excellence for poster presentation at the Research Showcase, Florida Atlantic University	2019
Alfred P. Sloan Foundation Research Fellowship in Computational and Evolutionary Molecular Biology	2017 – 2019
NSF Postdoctoral Research Fellowship in Biology (NSF DBI-1103639)	2011 – 2014
Visiting Scholar in the Department of Mathematics and Statistics at the University of Canterbury	11/2013
Short-term visitor at NIMBioS at the University of Tennessee	03/2012
University of Michigan Distinguished Dissertation Honorable Mention (top 16 of >750)	2012
NIH Genome Sciences Training Grant Fellowship (NIH T32HG00040)	2010 – 2011
Visiting Scholar in the Biomathematics Research Centre at the University of Canterbury	11/2010
PIBS Graduate Student Award for Excellence in Research (out of 14 Ph.D. programs)	2010
FASEB MARC Travel Award for the ASHG meeting ($1,850)	2010
Burroughs Wellcome Fund Travel Grant for the SMBE meeting ($2,500)	2010
Rackham Merit Fellowship, University of Michigan (three years of support)	2006 – 2010
FASEB MARC Travel Award for the ASHG meeting ($2,500)	2009
NIH Bioinformatics Training Grant Fellowship (NIH T32GM070449)	2007 – 2009
Ford Foundation Diversity Fellowship Honorable Mention	2008
NSF Graduate Research Fellowship Honorable Mention	2007

Rackham Summer Institute Fellowship, University of Michigan (summer support) 2006
Hernandez Award in Mathematics (highest-achieving student in Department of Mathematics) 2006
Florida Merit Scholarship (75% tuition to any Florida public university) 2002 – 2006
Costas G. Lemonopoulos Scholarship ($1,640) 2003

PROFESSIONAL SOCIETIES

Society for Molecular Biology and Evolution 2012 – 2018
American Society of Human Genetics 2009 – 2012, 2018
American Association for the Advancement of Science 2011 – 2012

CURRENT FUNDING

National Institutes of Health 2R35GM128590-06 ($1,874,360) 08/2024 – 05/2029
Maximizing Investigators' Research Award for Established Investigators (MIRA EI)
Identifying complex modes of adaptation from population-genomic data
Role: Principal Investigator

National Science Foundation DEB-2392257 ($648,125) 07/2023 – 06/2026
NSFDEB-NERC: Machine learning tools to discover balancing selection in genomes from spatial and temporal autocorrelations
Role: Principal Investigator

National Science Foundation DBI-2130666 ($596,571) 08/2021 – 07/2025
Statistical tools for learning about trait evolution across species
Role: Co-Principal Investigator (Raquel Assis, Principal Investigator)

PREVIOUS FUNDING

National Science Foundation BCS-1925825 ($255,000) 09/2019 – 08/2024
Collaborative Research: Understanding the deep ancestry of Indigenous people of North America
Role: Principal Investigator

National Institutes of Health 1R35GM128590-05 ($1,784,526) 08/2018 – 07/2024
Maximizing Investigators' Research Award for Early Stage Investigators (MIRA ESI)
Identifying complex modes of adaptation from population-genomic data
Role: Principal Investigator

National Science Foundation DEB-1753489 ($200,000) 03/2018 – 02/2023
SG: Inferring phylogenies under ancestral population structure
Role: Principal Investigator

College of Engineering and Computer Science, Florida Atlantic University ($25,000) 06/2020 – 06/2022
Seed Grant
Uncovering genomic footprints of recent evolutionary history in old world monkeys
Role: Co-Principal Investigator (Raquel Assis, Principal Investigator)

National Science Foundation IIS-2027339 ($90,000) 05/2020 – 04/2022
RAPID: COVID-19 Coronavirus Testbed and Knowledge Base Construction and Personalized Risk Evaluation
Role: Co-Principal Investigator (Xingquan Zhu, Principal Investigator; Massimo Caputi, Co-Principal Investigator)

National Institutes of Health R01GM130691 ($1,658,597, relinquished due to MIRA R35GM128590) 02/2019 – 01/2023
Y Chromosome Evolution
Role: Co-Investigator (Kateryna Makova, Principal Investigator; Paul Medvedev, Co-Investigator)

Alfred P. Sloan Foundation ($60,000) 09/2017 – 09/2019
Research Fellowship in Computational and Evolutionary Molecular Biology
Role: Principal Investigator

Center for Human Evolution and Diversity (CHED), Pennsylvania State University ($20,000) 01/2016 – 12/2016
Seed Grant
Are human sexually dimorphic traits affected by variation in Y-chromosomal ampliconic gene copy number?
Role: Co-Investigator (Kateryna Makova, Principal Investigator)

National Science Foundation DBI-1103639 ($155,000) 09/2011 – 12/2013
Postdoctoral Research Fellowship in Biology
Using mathematical models to study the spatial distribution of genetic variation
Role: Principal Investigator

MANUSCRIPTS SUBMITTED FOR JOURNAL OR CONFERENCE PUBLICATION

*EQUAL CONTRIBUTIONS, †CORRESPONDING, **BOLD** INDICATES GROUP MEMBER

6. **MR Amin**, **SP Arnab**, **Mohammad Khan**,, **M DeGiorgio†**. Detecting positive selection by modeling structure within images of genetic variation. Submitted to *Genome Biology and Evolution*.
5. S Ali, O Faqah, E Neubarth, MS Ashraf, **M DeGiorgio**, M Block, W Asghar**†**. Prediction of chronic obstructive pulmonary disease using machine learning models. Submitted to *Journal of Big Data*.
4. **SP Arnab**, **AL Campelo dos Santos**, M Fumagalli, **M DeGiorgio†**. Identifying adaptive footprints in the presence of demographic uncertainty. *bioRxiv* doi:10.1101/2025.08.15.670602. Submitted to *Genome Biology and Evolution*.
3. JM Lozano, **M DeGiorgio**, R Assis, R Adams**†**. Discriminating models of trait evolution. *bioRxiv* doi:10.1101/2025.06.12.659377. Submitted to *Evolution*.
2. **CG Santander***, **AL Campelo dos Santos***, **SP Arnab**, M Fumagalli**†**, **M DeGiorgio†**. Negative frequency-dependent selection: a positive outlook with deep learning. Under revision at *Philosophical Transactions of the Royal Society B*.
1. F Cabral*, **AL Campelo dos Santos***, B Barcena, R Soto, Y Łkete, **M DeGiorgio†**, J Lindo**†**. The genomic and oral histories of the Lipan Apache. Under revision at *Nature*.

JOURNAL PUBLICATIONS

*EQUAL CONTRIBUTIONS, †CORRESPONDING, **BOLD** INDICATES GROUP MEMBER

AS THE FIRST, LAST, OR CORRESPONDING AUTHOR

50. **R Kanjilal**, **AL Campelo dos Santos**, **SP Arnab**, **M DeGiorgio†**, R Assis**†** (2025) Genomic anomaly detection with functional data analysis. *Genes* 16:710.
49. **SP Arnab**, **AL Campelo dos Santos**, M Fumagalli, **M DeGiorgio†** (2025). Efficient detection and characterization of targets of natural selection using transfer learning. *Molecular Biology and Evolution* 42:msaf094.
48. **RH Adams†**, JR Lozano, M Duncan, J Green, R Assis*****, **M DeGiorgio*** (2025) A tale of too many trees: a conundrum for phylogenetic regression. *Molecular Biology and Evolution* 42:msaf032.
47. **MR Amin***, **M Hasan***, **M DeGiorgio†** (2024) Digital image processing to detect adaptive evolution. *Molecular Biology and Evolution* 41:msae242.

46. D First Rider, A Crop Eared Wolf, J Murray, A de Flamingh, **AL Campelo dos Santos**, F Lanoë, MN Zedeño, **M DeGiorgio†**, J Lindo**†**, RS Malhi**†** (2024) Genomic analyses correspond with deep persistence of peoples of Blackfoot Confederacy from glacial times. *Science Advances* 10:eadl6595.

45. **AL Campelo dos Santos†**, **M DeGiorgio***, R Assis* (2024) Predicting evolutionary targets and parameters of gene deletion from expression data. *Bioinformatics Advances* 4:vbae002.

44. **RH Adams†**, Z Cain, R Assis*****, **M DeGiorgio*** (2023) Robust phylogenetic regression. *Systematic Biology* 73:140-157.

43. **MR Amin†**, **M Hasan**, **SP Arnab**, **M DeGiorgio†** (2023) Tensor decomposition based feature extraction and classification to detect natural selection from genomic data. *Molecular Biology and Evolution* 40:msad216.

42. **RH Adams†**, **M DeGiorgio†** (2023) Likelihood-based tests of species trees. *Molecular Biology and Evolution* 40:msad159.

41. **SP Arnab†**, **MR Amin**, **M DeGiorgio†** (2023) Uncovering footprints of natural selection through spectral analysis of genomic summary statistics. *Molecular Biology and Evolution* 40:msad157.

40. **AL Campelo dos Santos†**, HS Lavalle Sullasi, O Gokcumen, J Lindo**†**, **M DeGiorgio†** (2023) Spatiotemporal fluctuations of population structure in the Americas revealed by a meta-analysis of the first decade of archaeogenomes. *American Journal of Biological Anthropology* 180:703-714.

39. **AL Campelo dos Santos†**, A Owings, HS Lavalle Sullasi, O Gokcumen, **M DeGiorgio†**, J Lindo**†** (2022) Genomic evidence for ancient human migration routes along South America's Atlantic coast. *Proceedings of the Royal Society B: Biological Sciences* 289:20221078.

38. **M DeGiorgio†**, ZA Szpiech**†** (2022) A spatially aware likelihood test to detect sweeps from haplotype distributions. *PLoS Genetics* 18:e1010134. **[Highlighted by preLights]**

37. **X Cheng†**, **M DeGiorgio†** (2022) *BalLeRMix+*: Mixture model approaches for robust joint identification of both positive selection and long-term balancing selection. *Bioinformatics* 38:861-863.

36. **MR Mughal†**, **M DeGiorgio†** (2021) Properties and unbiased estimation of *F*- and *D*-statistics in samples containing related and inbred individuals. *Genetics* 220:iyab090.

35. **RH Adams**, H Blackmon, **M DeGiorgio†** (2021) Of traits and trees: probabilistic distances under continuous trait models for dissecting the interplay among phylogeny, model, and data. *Systematic Biology* 70:660-680.

34. **RH Adams†**, TA Castoe, **M DeGiorgio†** (2021) *PhyloWGA*: chromosome-aware phylogenetic interrogation of whole genome alignments. *Bioinformatics* 38:1923-1925.

33. **M DeGiorgio†**, R Assis**†** (2021) Learning retention mechanisms and evolutionary parameters of duplicate genes from their expression data. *Molecular Biology and Evolution* 38:1209-1224.

32. J Lindo**†**, **M DeGiorgio†** (2021) Understanding the adaptive evolutionary history of South American ancient and modern populations via genomics. *Genes* 12:360.

31. **MR Mughal†**, **H Koch**, **J Huang**, F Chiaramonte, **M DeGiorgio†** (2020) Learning the properties of adaptive regions with functional data analysis. *PLoS Genetics* 16:e1008896.

30. D Setter, S Mousset, **X Cheng**, R Nielsen, **M DeGiorgio†**, J Hermisson**†** (2020) VolcanoFinder: genomic scans for adaptive introgression. *PLoS Genetics* 16:e1008867.

29. **X Cheng**, **M DeGiorgio†** (2020) Flexible mixture model approaches that accommodate footprint size variability for robust detection of balancing selection. *Molecular Biology and Evolution* 37:3267-3291.

28. **AM Harris**, **M DeGiorgio†** (2020) A likelihood approach for uncovering selective sweep signatures from haplotype data. *Molecular Biology and Evolution* 37:3023-3046.

27. R Vegesna*, M Tomaszkiewicz*, OA Ryder, R Campos-Sánchez, P Medvedev, **M DeGiorgio†**, KD Makova**†** (2020) Ampliconic genes on the great ape Y chromosomes: Rapid evolution of copy number but conservation of expression levels. *Genome Biology and Evolution* 12:852-869

26. **AM Harris**, **M DeGiorgio†** (2020) Identifying and classifying shared selective sweeps from multilocus data. *Genetics* 215:143-171.

25. **H Koch**, **M DeGiorgio†** (2020) Maximum likelihood estimation of species trees from gene trees in the presence of ancestral population structure. *Genome Biology and Evolution* 12:3977-3995.

24. **MR Mughal**, **M DeGiorgio†** (2019) Localizing and classifying adaptive targets with trend filtered regression. *Molecular Biology and Evolution* 36:252-270.

23. **X Cheng**, **M DeGiorgio†** (2019) Detection of shared balancing selection in the absence of trans-species polymorphism. *Molecular Biology and Evolution* 36:177-199.

22. **AM Harris**, NR Garud, **M DeGiorgio†** (2018) Detection and classification of hard and soft sweeps from unphased genotypes by multilocus genotype identity. *Genetics* 210:1429-1452.

21. J Lindo, M Rogers, EK Mallott, B Petzelt, J Mitchell, D Archer, JS Cybulski, RS Malhi**†**, **M DeGiorgio†** (2018) Patterns of genetic coding variation in a Native American population before and after European contact. *American Journal of Human Genetics* 103:806-815.

20. **X Cheng**, **C Xu**, **M DeGiorgio†** (2017) Fast and robust detection of ancestral selective sweeps. *Molecular Ecology* 26:6871-6891.

19. **AM Harris**, **M DeGiorgio†** (2017) Admixture and ancestry inference from ancient and modern samples through measures of population genetic drift. *Human Biology* 89:1. **[Gabriel W. Lasker Award for most significant contribution to the journal]**

18. J Lindo, A Achilli, D Archer, C Valdiosera, B Petzelt, J Mitchell, R Worl, EJ Dixon, T Fifield, M Rasmussen, E Willerslev, J Cybulski, B Kemp**†**, **M DeGiorgio†**, RS Malhi**†** (2017) Ancient individuals from the North American Northwest Coast reveal 10,000 years of regional continuity. *Proceedings of the National Academy of Sciences of the USA* 114:4093-4098.

17. **AM Harris**, **M DeGiorgio†** (2017) An unbiased estimator of gene diversity with improved variance for samples containing related and inbred individuals of any ploidy. *G3: Genes, Genomes, Genetics* 7:671-691.

16. J Lindo, E Huerta-Sánchez, S Nakagome, M Rasmussen, B Petzelt, J Mitchell, JS Cybulski, E Willerslev, **M DeGiorgio†**, RS Malhi**†** (2016) A time transect of exomes from a Native American population before and after European contact. *Nature Communications* 7:13175.

15. **C Prada†**, B Hanna, AF Budd, C Woodley, J Schmutz, J Grimwood, R Iglesias-Prieto, JM Pandolfi, D Levitan, N Knowlton, H Kitano, **M DeGiorgio†**, M Medina**†** (2016) Empty niches after extinctions increase population sizes of modern corals. *Current Biology* 26:1-5.

14. A Fungtammasan, M Tomaszkiewicz, R Campos-Sanchez, K Eckert, **M DeGiorgio†**, KD Makova**†** (2016) Reverse transcription errors and RNA-DNA differences at short tandem repeats. *Molecular Biology and Evolution* 33:2744-2758.

13. **M DeGiorgio†**, NA Rosenberg (2016) Consistency and inconsistency of phylogenetic consensus methods for inferring species trees from gene trees in the presence of ancestral population structure. *Theoretical Population Biology* 110:12-24.

12. **M DeGiorgio†**, CD Huber, MJ Hubisz, I Hellmann, R Nielsen (2016) *SweepFinder2*: Increased sensitivity, robustness, and flexibility. *Bioinformatics* 32:1895-1897.

11. M Raghavan*, M Steinrücken*, K Harris*, S Schiffels*, S Rasmussen*, **M DeGiorgio***, A Albrechtsen*, C Valdiosera*, MC Ávila-Arcos*, A-S Malaspinas*, A Eriksson, I Moltke, M Metspalu, JR Homburger, J Wall, OE Cornejo, JV Moreno-Mayar, TS Korneliussen, T Pierre, M Rasmussen, PF Campos, P de Barros Damgaard, ME Allentoft, J Lindo, E Metspalu, R Rodríguez-Varela, J Mansilla, C Henrickson, A Siguin-Orlando, H Malmström, T Safford Jr, SS Shingarpure, A Moreno-Esrada, M Karmin, K Tambets, A Bergström, Y Xue, V Warmuth, A Friend, J Singarayer, P Valdes, F Balloux, I Leboreiro, JL Vera, H Rangel-Villalobos, D Pettener, D Luiselli, LG Davis, E Heyer, CPE Zollikofer, MS Ponce de León, CI Smith, V Grimes, K-A Pike, M Deal, BT Fuller, B Arriaza, V Standen, MF Luz, F Ricaut, N Guidon, L Osipova, MI Voevoda, OL Posukh, O Balanovsky, M Lavryashina, Y Bogunov, E Khusnutdinova, M Gubina, E

Balanovska, S Fedorova, S Litvinov, B Malyarchuk, M Derenko, MJ Mosher, D Archer, J Cybulski, B Petzelt, J Mitchell, R World, PJ Norman, P Parham, BM Kemp, T Kivisild, C Tyler-Smith, MS Sandhu, M Crawford, R Villems, DG Smith, MR Waters, T Goebel, JR Johnson, RS Malhi, M Jakobsson, DJ Meltzer, A Manica, R Durbin, CD Bustamante, YS Song, R Nielsen, E Willerslev (2015) Genomic evidence for the Pleistocene and recent population history of Native Americans. *Science* doi:10.1126/science.aab3884.

10. **M DeGiorgio†**, KE Lohmueller, R Nielsen (2014) A model-based approach for identifying signatures of ancient balancing selection in genetic data. *PLoS Genetics* 10:e1004561. **[Recommended by Faculty of 1000]**

9. **M DeGiorgio†**, J Syring, AJ Eckert, AI Liston, R Cronn, DB Neale, NA Rosenberg (2014) An empirical evaluation of species tree inference strategies using a multilocus dataset from North American pines. *BMC Evolutionary Biology* 14:67.

8. **M DeGiorgio**, JH Degnan (2014) Robustness to divergence time underestimation when inferring species trees from estimated gene trees. *Systematic Biology* 63:66-82.

7. E Huerta-Sánchez*†, **M DeGiorgio*†**, L Pagani*, A Tarekegn, R Ekong, T Antao, A Cardona, HE Montgomery, GL Cavalleri, PA Robbins, ME Weale, N Bradman, E Bekele, T Kivisild, C Tyler-Smith, R Nielsen (2013) Genetic signatures reveal high-altitude adaptation in a set of Ethiopian populations. *Molecular Biology and Evolution* 30:1877-1888.

6. **M DeGiorgio†**, NA Rosenberg (2013) Geographic sampling scheme as a determinant of the major axis of genetic variation in principal components analysis. *Molecular Biology and Evolution* 30:480-488.

5. **M DeGiorgio†**, JH Degnan, NA Rosenberg (2011) Coalescence-time distributions in a serial founder model of human evolutionary history. *Genetics* 189:579-593.

4. **M DeGiorgio*†**, I Jankovic*, NA Rosenberg (2010) Unbiased estimation of gene diversity in samples containing related individuals: exact variance and arbitrary ploidy. *Genetics* 186:1367-1387.

3. **M DeGiorgio†**, JH Degnan (2010) Fast and consistent estimation of species trees using supermatrix rooted triples. *Molecular Biology and Evolution* 27:552-569.

2. **M DeGiorgio**, M Jakobsson, NA Rosenberg (2009) Explaining worldwide patterns of human genetic variation using a coalescent-based serial founder model of migration outward from Africa. *Proceedings of the National Academy of Sciences of the United States of America* 106:16057-16062.

1. **M DeGiorgio†**, NA Rosenberg (2009) An unbiased estimator of gene diversity in samples containing related individuals. *Molecular Biology and Evolution* 26:501-512.

AS A CONTRIBUTING AUTHOR

27. M Duncan, **M DeGiorgio**, R Assis†, R Adams†. Robust regression rescues poor phylogenetic decisions. *BMC Ecology and Evolution* (accepted).

26. M Lopolo*, C Avanzi*, S Duchene, P Luisi, A de Flamingh, G Yaxal Ponce-Soto, G Tressieres, S Neumeyer, F Lemoine, EA Nelson, M Iraeta-Orbegozo, JS Cybulski, J Mitchell, VT Marks, LB Adams, J Lindo, **M DeGiorgio**, N Ortiz, C Wiens, J Hiebert, A Bonifaz, G Montes de Oca, V Paredes-Solis, C Franco-Paredes, L Vera-Cabrera, JG Pereira Brunelli, M Jackson, JS Spencer, CG Salgado, X-Y Han, CM Pearce, AK Warren, PS Rosa, AJ de Finardi, A de FF Belone, C Ferreira, PN Suffys, AN Brum Fontes, SEG Vasconcellos, R Schaub, P Couppié, K Drak Alsibai, R Hernández-Castro, M Silva Miranda, I Estrada-Garcia, F Jurado-Santacruz, L Orlando, H Schroeder, L Quinata-Murci, M Del Papa, R Lahiri, RS Malhi, S Rasmussen, N Rascovan† (2025) Pre-European contact leprosy in the Americas and its current persistence. *Science* 389:eadu7144.

25. JR Lozano, M Duncan, DD McKenna, T Castoe, **M DeGiorgio**, RH Adams† (2025) *TraitTrainR*: Accelerating large-scale simulation under models of trait evolution. *Bioinformatics Advances* 5:vbae196.

24. AA Piya, **M DeGiorgio**, R Assis† (2023) Predicting expression divergence between single-copy orthologs in two species. *Genome Biology and Evolution* 15:evad078.

23. S Joseph, A Achilli, N Migliore, A Olivieri, A Torroni, A Owings, **M DeGiorgio**, WG Ordóñez, JJO Aguilú, F González-

Andrade†, J Lindo† (2023) Genomic evidence for adaptation to tuberculosis in the Andes before European contact. *iScience* 26:106034.

22. DR Schield†, BW Perry, **RH Adams**, ML Holding, ZL Nikolakis, SS Gopalan, CF Smith, JM Parker, JM Meik, **M DeGiorgio**, SP Mackessy, TA Castoe† (2022) The roles of balancing selection and recombination in the evolution of rattlesnake venom. *Nature Ecology and Evolution* 6:1367-1380.

21. J Lindo†, R De La Rosa, **AL Campelo dos Santos**, M Sans, **M DeGiorgio**, G Figueiro† (2022) The genomic prehistory of the Indigenous people of Uruguay. *PNAS Nexus* 1:pgac047.

20. AL Severson, BF Byrd, EK Mallott, A Owings, **M DeGiorgio**, A de Flamingh, C Nijmeh, MV Arellano, A Leventhal, NA Rosenberg†, RS Malhi† (2022). Ancient and modern genomics of the Ohlone Indigenous population in California. *Proceedings of the National Academy of Sciences of the USA* 119:e2111533119.

19. W Guiblet, **M DeGiorgio**, **X Cheng**, F Chiaromonte, K Eckert, Y-F Huang†, KD Makova† (2021) Selection and thermostability suggest G-quadruplexes are novel functional elements of the human genome. *Genome Research* 31:1136-1149.

18. D Wu, J Dou, X Chai, C Bellis, A Wilm, CC Shih, WWJ Soon, N Bertin, CB Lin, CC Khor, **M DeGiorgio**, S Cheng, L Bao, N Karmani, WYK Hwang, S Davila, P Tan, A Shabbir, A Moh, E-K Tan, JN Foo, LL Goh, KP Leong, RSY Foo, CSP Lam, AM Richards, C-Y Cheng, T Aung, TY Wong, HK Ng, SG10K Consortium (2019) Large-scale whole-genome sequencing of three diverse Asian populations in Singapore. *Cell* 3:736-749.

17. H Mei, B Arbeithuber, MA Cremona, **M DeGiorgio**, A Nekrutenko (2019) A high-resolution view of adaptive event dynamics in a plasmid. *Genome Biology and* Evolution 11:3022-3034.

16. D Ye, AA Zaidi, M Tomaszkiewicz, C Liebowitz, **M DeGiorgio**, MD Shriver, KD Makova (2018) High levels of copy number variation of ampliconic genes across major human Y haplogroups. *Genome Biology and Evolution* 10:1333-1350.

15. D Xu, P Pavlidis, RO Taskent, N Alachiotis, C Flanagan, **M DeGiorgio**, R Blekhman, S Ruhl, O Gokcumen (2017) Archaic hominin introgression in Africa contributes to functional salivary *MUC7* genetic variation. *Molecular Biology and Evolution.* 34:2704-2715.

14. L Pagani, DJ Lawson, E Jagoda, A Mörseburg, A Eriksson, M Mitt, F Clemente, G Hudjashov, **M DeGiorgio**, L Saag, JD Wall, A Cardona, R Mägi, MA Wilson Sayres, S Kaewert, C Inchley, CL Scheib, M Järve, M Karmin, GS Jacobs, T Antao, FM Iliescu, A Kushniarevich, Q Ayub, C Tyler-Smith, Y Xue, B Yunusbayev, K Tambets, CB Mallick, L Saag, E Pocheshkhova, G Andriadze, C Muller, MC Westaway, DM Lambert, G Zoraqi, S Turdikulova, D Dalimova, Z Sabitov, GNN Sultana, J Lachance, S Tishkoff, K Momynaliev, J Isakova, LD Damba, M Gubina, P Nymadawa, I Evseeva, L Atramentova, O Utevska, F-X Ricaut, N Brucato, H Sudoyo, T Letellier, MP Cox, NA Barashkov, V Skaro, L Mulahasanovic, D Primorac, H Sahakyan, M Mormina, CA Eichstaedt, DV Lichman, S Abdullah, G Chaubey, JTS Wee, E Mihailov, A Karunas, S Litvinov, R Khusainova, N Ekomasova, V Akhmetova, I Khidiyatova, D Marjanović, L Yepiskoposyan, DM Behar, E Balanovska, A Metspalu, M Derenko, B Malyarchuk, M Voevoda, SA Fedorova, LP Osipova, MM Lahr, P Gerbault, M Leavesley, AB Migliano, M Petraglia, O Balanovsky, EK Khusnutdinova, E Metspalu, MG Thomas, A Manica, R Nielsen, R Villems, E Willerslev, T Kivisild, M Metspalu (2016) Genomic analyses inform on migration events during the peopling of Eurasia. *Nature* 538:238-242.

13. CD Huber, **M DeGiorgio**, I Hellmann, R Nielsen (2016) Detecting recent selective sweeps while controlling for mutation rate and background selection. *Molecular Ecology* 25:142-156.

12. M Karmin, L Saag, M Vicente, MA Wilson Sayres, M Järve, U Gerst Talas, S Rootsi, A-M Ilumäe, R Mägi, M Mitt, L Pagani, T Puurand, Z Faltyskova, F Clemente, A Cardona, E Metspalu, H Sahakyan, B Yunusbayev, G Hudjashov, **M DeGiorgio**, E-L Loogväli, C Eichstaedt, M Eelmets, G Chaubey, K Tambets, S Litvinov, M Mormina, Y Xue, Q Ayub, G Zoraqi, T Sand Korneliussen, F Akhatova, J Lachance, S Tishkoff, K Momynaliev, F-X Ricaut, P Kusuma, H Razafindrazaka, D Pierron, MP Cox, G Nurun N Sultana, R Willerslev, C Muller, M Westaway, D Lambert, V Skaro, L Kovačević, S Turdikulova, D Dalimova, R Khusainova, N Trofimova, V Akhmetova, I Khidiyatova, DV Lichman, J Isakova, E Pocheshkhova, Z Sabitov, NA Barashkov, P Nymadawa, E Mihailov, J Wee Tien Seng, I Evseeva, A Bamberg Migliano, S Abdullah, G Andriadze, D Primorac, L Atramentova, O Utevska, L Yepiskoposyan, D Marjanović, A Kushniarevich, DM Behar, C Gilissen, L Vissers, J Veltman, E Balanovska, M Derenko, B Malyarchuk, A Metspalu, Sa

Fedorova, A Eriksson, A Manica, F Mendez, TM Karafet, K Veeramah, N Bradman, M Hammer, LP Osipova, O Balanovsky, EK Khusnutdinova, K Johnsen, M Remm, MG Thomas, C Tyler-Smith, PA Underhill, E Willerslev, R Nielsen, M Metspalu, R Villems, T Kivisild (2015) A recent bottleneck of Y chromosome diversity coincides with a global change in culture. *Genome Research* 24:459-466.

11. L Bao, D Elleder, R Malhotra, **M DeGiorgio**, T Maravegias, D Hunter, M Poss (2014) Computational and statistical analyses of insertional polymorphic endogenous retroviruses in a non-model organism. *Computation* 2:221-245.

10. FJ Clemente, A Cardona, CE Inchley, BM Peter, G Jacobs, L Pagani, DJ Lawson, T Antão, M Vicente, M Mitt, **M DeGiorgio**, Z Faltyskova, Y Xue, Q Ayub, M Szpak, R Mägi, A Eriksson, A Manica, M Raghavan, M Rasmussen, S Rasmussen, E Willerslev, A Vidal-Puig, C Tyler-Smith, R Villems, R Nielsen, M Metspalu, B Malyarchuk, M Derenko, T Kivisild (2014) A selective sweep on a deleterious mutation in *CPT1A* Arctic populations. *American Journal of Human Genetics* 95:584-589.

9. A-S Malaspinas, O Lao, H Schroeder, M Rasmussen, M Raghavan, I Moltke, PF Campos, VF Gonçalves, S Rasmussen, F Santana Sagredo, A Albrechtsen, ME Allentoft, PLF Johnson, M Li, S Reis, DV Bernardo, **M DeGiorgio**, A Duggan, M Bastos, Y Wang, J Stenderup, S Brunak, T Sicheritz-Ponten, L Orlando, TD Price, R Nielsen, JD Jensen, J Heinemeier, J Olsen, C Rodrigues-Carvalho, M Mirazón Lahr, M Neves, M Kayser, T Higham, M Stoneking, SDJ Pena, E Willerslev (2014) Two ancient human genomes reveal Polynesian ancestry among the indigenous Botocudos of Brazil. *Current Biology* 24:R1035-R1037.

8. M Raghavan, **M DeGiorgio**, A Albrechtsen, I Moltke, P Skoglund, TS Korneliussen, B Gronnøw, HC Gulløv, M Friesen, W Fitzhugh, H Malmström, S Rasmussen, J Olsen, L Melchior, BT Fuller, SM Fahrni, T Stafford Jr, V Grimes, MAP Renouf, J Cybulski, N Lynnerup, MM Lahr, K Britton, R Knecht, J Arneborg, M Metspalu, OE Cornejo, A-S Malaspinas, Y Wang, M Rasmussen, V Raghavan, TVO Hansen, E Khusnutdinova, T Pierre, K Dneprovski, C Andreason, H Lange, MG Hayes, J Coltrain, VA Spitsyn, A Götherström, L Orlando, T Kivisild, R Villems, M Crawford, FC Nielsen, J Dissing, J Heinemeier, M Meldgaard, C Bustamante, DH O'Rourke, M Jakobsson, MTP Gilbert, R Nielsen, E Willerslev (2014) The genetic prehistory of the New World Arctic. *Science* 345: doi:10.10.1126/science.1255832.

7. A-S Malaspinas, O Tange, JV Moreno-Mayar, M Rasmussen, **M DeGiorgio**, Y Wang, CE Valdiosera, G Politis, E Willerslev, R Nielsen (2014) *bammds*: A tool for assessing the ancestry of low depth whole genome data using multidimensional scaling (MDS). *Bioinformatics* 30:2962-2964.

6. I Olalde, ME Allentoft, F Sánchez-Quinto, G Santpere, CWK Chiang, **M DeGiorgio**, J Prado-Martínez, JA Rodríguez, S Rasmussen, J Quilez, O Ramírez, M Fernández, ME Prada, JMV Encinas, R Nielsen, MG Netea, J Novembre, RA Sturm, P Sabeti, T Marquès-Bonet, A Navarro, E Willerslev, C Lalueza-Fox (2014) Derived immune and ancestral pigmentation alleles in a 7,000-year-old Mesolithic European. *Nature* 507:225-228.

5. M Rasmussen, SL Anzick, MR Waters, P Skoglund, **M DeGiorgio**, TW Stafford Jr, S Rasmussen, I Moltke, A Albrechtsen, SM Doyle, GD Poznik, V Gudmundsdottir, R Yadav, A-S Malaspinas, SS White V, M Allentoft, OE Cornejo, K Tambets, A Eriksson, P Heintzman, M Meiri, M Karmin, T Sand Korneliussen, TL Pierre, J Stenderup, L Saag, V Warmuth, M Cabrita Lopes, S Brunak, T Sicheritz-Ponten, I Barnes, M Collins, L Orlando, F Balloux, A Manica, M Metspalu, CD Bustamante, M Jakobsson, R Gupta, R Nielsen, E Willerslev (2014) The genome of a late Pleistocene human found at a Clovis burial site in western Montana. *Nature* 506:225-229.

4. M Raghavan, P Skogland, K Graf, M Metspalu, A Albrechtsen, I Moltke, S Rasmussen, T Stafford Jr, L Orlando, E Metspalu, M Karmin, K Tambets, S Rootsi, R Mägi, PF Campos, E Balanovska, O Balanovsky, E Khusnutdinova, S Litvinov, LP Osipova, SA Federova, MI Voevoda, **M DeGiorgio**, T Sicheritz-Ponten, S Brunak, S Demeshchenko, T Kivisild, R Villems, R Nielsen, M Jakobsson, E Willerslev (2014) Upper Paleolithic Siberian genome reveals dual ancestry of Native Americans. *Nature* 505:87-91.

3. KE Lohmueller, T Sparsø, Q Li, E Andersson, T Korneliussen, A Albrechtsen, K Banasik, N Grarup, I Hallgrimsdottir, K Kill, TO Kilpeläinen, N Krarup, TH Pers, G Sanchez, Y Hu, **M DeGiorgio**, T Jørgensen, A Sandbæk, T Lauritzen, S Brunak, K Kristiansen, Y Li, T Hansen, J Wang, R Nielsen, O Pedersen (2013) Whole exome sequencing of 2,000 Danish individuals and the role of low-frequency coding variants in type 2 diabetes. *American Journal of Human Genetics* 93:1072-1086.

2. TJ Pemberton, **M DeGiorgio**, NA Rosenberg (2013) Population structure in a comprehensive data set on human

microsatellite variation. *G3: Genes, Genomes, Genetics* 3:909-916.

1. JH Degnan, **M DeGiorgio**, D Bryant, NA Rosenberg (2009) Properties of consensus methods for inferring species trees from gene trees. *Systematic Biology* 58:35-54.

SOFTWARE (GITHUB HTTPS://GITHUB.COM/MDEGIORGIO)

SKINET (Support vector Kernel for Inferring Natural selection and Evolutionary Target detection)

A Python program that implements the novel trend-filtered support vector classifier *SKINET* of Amin *et al*. (*submitted*) for detecting adaptive regions while modeling the structure within images of genomic variation.

PULSe (Positive-Unlabeled Learning for SElection detection)

A Python program that implements the semi-supervised classifier *PULSe* of Arnab *et al*. (*submitted*) for identifying adaptive genomic loci under settings of demographic uncertainty

ANDES (ANomaly DEtection using Summary statistics)

A program that implements the anomaly detection model *ANDES* of Kanjilal *et al*. (2025) for uncovering aberrant genomic regions by modeling genomic autocovariation with functional data analysis.

TrIdent (TRansfer learning for IDENTification of adaptation)

A Python program that implements the classifier and predictor *TrIdent* of Arnab *et al*. (2025) for identifying and characterizing adaptive regions through transfer learning from haplotype alignment images.

α*-DAWG* (α-molecules for Detecting Adaptive Windows in Genomes)

A Python program that implements the classifier α*-DAWG* of Amin *et al*. (2024) for identifying adaptive genomic windows through α-molecule basis expansion haplotype alignment images.

CLOUDe (CLassification using Ornstein-Uhlenbeck of Deletions)

An R program that implements the suite of machine learning methods *CLOUDe* of Campelo dos Santos *et al*. (2024) for predicting evolutionary targets of gene deletion events from expression data in two species.

ROBRT (ROBust Regression on Trees)

An R program that estimates trait association on phylogenetic trees using the robust L1, M, S, and MM phylogenetic independent contrast regression estimators of Adams *et al*. (2023).

T-REx (Tensor decomposition-based Robust feature Extraction and classification)

A Python program that implements the classifier *T-REx* of Amin *et al*. (2023) for identifying adaptive regions through tensor decomposition of images of haplotype alignments.

SISSSCO (Spectral Inference of Summary Statistic Signals using COnvolutional neural networks)

A Python program that implements the classifier *SISSSCO* of Arnab *et al*. (2023) for identifying adaptive regions through spectral analysis of summary statistic signals.

SpeciesTopoTestR

An R program that computes the KH*, SH*, and SOWH* likelihood tests of species topology hypotheses of Adams and DeGiorgio (2023).

LASSI-Plus

A C++ program that implements the likelihood ratio Λ statistic of DeGiorgio and Szpiech (2022) for detecting selective sweeps and inferring their softness using the spatial distribution of distortions in the haplotype frequency spectrum.

BalLeRMix+

A Python program that can simultaneously perform genomic scans of positive selection and long-term balancing selection using the composite likelihood ratio *B* statistics of Cheng and DeGiorgio (2022).

funbiased

A Python program that computes the F_2, F_3, normalized F_3, and normalized F_4 statistics of Mughal and DeGiorgio (2021).

PRDATR (Probabilistic Distances under models of Adaptive Trait evolution in R)

An R program that computes the probabilistic distances between phylogenetic models of continuous trait evolution of Adams *et al*. (2021).

PhyloWGA

An R program for performing chromosome-aware phylogenetic interrogation of whole genome alignments of Adams *et al*. (2021).

CLOUD (CLassification using Ornstein-Uhlenbeck of Duplicates)

An R program that implements the multi-layer neural network method *CLOUD* of DeGiorgio and Assis (2021) for classifying duplicate gene retention mechanisms and predicting their evolutionary parameters from gene expression data in two species.

SURFDAWave (Sweep inference Using Regularized FDA with WAVElets)

An R program that implements the classifier and predictor *SURFDAWave* of Mughal *et al*. (2020) for identifying adaptive targets and learning their evolutionary parameters using the spatial distribution of summary statistics around a test site.

VolcanoFinder

A C program that can perform genomic scans for adaptive introgression using the composite likelihood ratio test of Setter *et al*. (2020).

BalLeRMix (BALancing selection LikElihood Ratio MIXture models)

A Python program that can perform genomic scans for balancing selection using the composite likelihood ratio *B* statistics of Cheng and DeGiorgio (2020).

LASSI (Likelihood-based Approach for Selective Sweep Inference)

A Python program that implements the likelihood ratio *T* statistic of Harris and DeGiorgio (2020) for detecting selective sweeps and inferring their softness.

SS-X12

A Python program that implements the classifier SS-H12 of Harris and DeGiorgio (2020) for detecting shared selective sweeps, and classifying them as ancestral or convergent, as well as hard or soft.

TASTI (Taxa with Ancestral structure Species Tree Inference)

An R program that implements the maximum likelihood estimator of species trees in the presence of ancestral population structure of Koch and DeGiorgio (2020).

Trendsetter

A Python program that implements the classifier *Trendsetter* of Mughal and DeGiorgio (2019) for classifying genomic regions as neutral, hard sweeps, or soft sweeps using the spatial distribution of summary statistics around test sites.

MULLET (MULti-species LikElihood Tests)

A C program that can perform scans for ancient multi-species balancing selection in the absence of trans-species

polymorphism using the composite likelihood ratio tests of Cheng and DeGiorgio (2019).

MuteBaSS (MUlTi-spEcies Balancing Selection Summaries)

A Python program that computes multi-species variants of HKA and NCD for detecting long-term balancing selection from Cheng and DeGiorgio (2019).

CalcABS

A Python program that computes the ancestral branch statistic (ABS) for detecting ancestral selective sweeps of Cheng *et al*. (2017).

BestHet

An R program that computes the unbiased estimator of expected heterozygosity of Harris and DeGiorgio (2017) at a locus, as well as F_{ST} and the locus-specific branch length, which are functions of expected heterozygosity.

SweepFinder2

A C program that can perform genomic scans for recent selective sweeps while controlling for background selection and mutation rate variation using the composite likelihood ratio tests of Huber *et al*. (2016) and DeGiorgio *et al*. (2016).

BALLET (BALancing selection LikElihood Test)

A C program that performs genomic scans for balancing selection using the composite likelihood ratio tests of DeGiorgio *et al*. (2014).

INVITED DEPARTMENTAL AND CONFERENCE TALKS

32. Efficient detection and characterization of targets of natural selection using transfer learning. *Probabilistic Modeling in Genomics* (2025).
31. Enhancing detection and characterization of adaptation from genomic variation. *Department of Computer Science at the University of Central Florida* (2025).
30. Feature generation strategies for improving predictive models of adaptation. *EvoGenomics.AI* (2023).
29. Feature generation strategies for improving predictive models of adaptation. *Center for Computational Biology and Bioinformatics at Pennsylvania State University* (2023).
28. Computational genomics of adaptation. *IEEE Palm Beach Section Tech Talks* (2021).
27. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Computer and Electrical Engineering and Computer Science at Florida Atlantic University* (2019).
26. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Anthropology and the Institute of Quantitative Theory and Methods at Emory University* (2019).
25. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Biology at the University of New Mexico* (2019).
24. Uncovering footprints of adaptation from ancient and modern genomes. *Department of Computer Science at the University of Central Florida* (2018).
23. Fast and robust detection of ancestral selective sweeps. *Bioinformatics and Genomics Retreat at Pennsylvania State University* (2017).
22. Uncovering regions of ancestral positive selection with ancient and modern DNA. *Center for Medical Genomics at Pennsylvania State University* (2017).
21. Uncovering regions of ancestral positive selection with ancient and modern DNA. *Department of Biology at San Francisco State University* (2017).

20. Uncovering regions of ancestral positive selection with ancient and modern DNA. *Mathematical Biology Research Group at the University of California, Merced* (2017).
19. Adaptive maintenance of ancient alleles: likelihood approaches for detecting balancing selection. *American Association of Physical Anthropologists* (2016).
18. Statistical techniques for identifying adaptive alleles with an application to human evolution. *Center for Computational Molecular Biology at Brown University* (2015).
17. Statistical techniques for identifying adaptive alleles with an application to human evolution. *Department of Natural Resources and Environmental Sciences at the University of Illinois, Urbana-Champaign* (2015).
16. Statistical techniques for identifying adaptive alleles with an application to human evolution. *School of Biological Sciences at Washington State University* (2015).
15. Composite likelihood methods for detecting natural selection. *Bioinformatics Program at the University of California, Los Angeles* (2014).
14. Composite likelihood ratio tests for detecting natural selection. *Department of Mathematics at Pennsylvania State University* (2014).
13. Composite likelihood methods for detecting natural selection. *Department of Statistics at Pennsylvania State University* (2014).
12. A likelihood-based approach for detecting selective sweeps. *Bioinformatics and Genomics Retreat at Pennsylvania State University* (2014).
11. Methods for detecting adaptation while accounting for evolutionary relationships. *Computational and Statistical Genomics Workshop at Pennsylvania State University* (2013).
10. Using models of evolutionary history to understand human genetic variation. *Institute for CyberScience and Department of Biology at Pennsylvania State University* (2013).
9. Using models of evolutionary history to understand human genetic variation. *Departments of Biostatistics and Human Genetics at the University of Michigan* (2013).
8. Using models of evolutionary history to understand human genetic variation. *Bioinformatics Program at Boston University* (2013).
7. Using models of evolutionary history to understand human genetic variation. *Department of Biological Sciences at the University of Alabama* (2013).
6. Using models of evolutionary history to understand human genetic variation. *Departments of Biology and Mathematics at the University of Oregon* (2013).
5. Using models of evolutionary history to understand human genetic variation. *Department of Biological Statistics and Computational Biology at Cornell University* (2013).
4. Using models of evolutionary history to understand human genetic variation. *BioFrontiers Institute at the University of Colorado, Boulder* (2013).
3. Altitude adaptation in Ethiopia: the effect of admixture. *High Altitude and Cold Meeting at the University of Cambridge* (2012).
2. Genetic variation and modern human origins. *NIMBioS at the University of Tennessee* (2012).
1. Explaining worldwide patterns of human genetic variation using a coalescent-based serial founder model of migration outward from Africa. *University of Canterbury* (2010).

CONTRIBUTED CONFERENCE TALKS

BOLD INDICATES GROUP MEMBER

12. **MR Amin**, **M DeGiorgio** (2025) Trend-filtered support vector machine to detect natural selection from genomic autocovariation. *Congress of the European Society for Evolutionary Biology.* **[Presented by group member]**
11. **AL Campelo dos Santos**, **M DeGiorgio**, R Assis (2023) Predicting evolutionary targets and parameters of gene deletion from expression data. *Evolution.* **[Presented by group member]**
10. **SP Arnab**, **M DeGiorgio** (2022) Uncovering footprints of natural selection through time-frequency analysis of genomic summary statistics. *Population, Evolutionary and Quantitative Genetics.* **[Presented by group member]**
9. **MR Mughal**, **H Koch**, **J Huang**, F Chiaramonte, **M DeGiorgio** (2020) Learning the properties of adaptive regions with functional data analysis. *The Allied Genetics Conference.* **[Presented by group member]**
8. **MR Mughal**, **H Koch**, **J Huang**, F Chiaramonte, **M DeGiorgio** (2019) Learning the properties of adaptive regions with functional data analysis. *Genome Informatics.* **[Presented by group member]**
7. **X Cheng, M DeGiorgio** (2019) Robust and window-insensitive mixture model approaches for localizing balancing selection. *Evolution.* **[Presented by group member]**
6. **AM Harris, M DeGiorgio** (2019) A likelihood approach for uncovering selective sweep signatures from haplotype data. *Evolution.* **[Presented by group member]**
5. **X Cheng, M DeGiorgio** (2018) Detection of shared balancing selection in the absence of trans-species polymorphism. *Population, Evolutionary and Quantitative Genetics.* **[Presented by group member]**
4. **M DeGiorgio**, KE Lohmueller, R Nielsen (2014) A model-based approach for identifying signatures of ancient balancing selection in genetic data. *Society for Molecular Biology and Evolution.*
3. **M DeGiorgio**, KE Lohmueller, R Nielsen (2012) Balancing selection in the human genome. *1000 Genomes Project Community Meeting.*
2. **M DeGiorgio**, JH Degnan, NA Rosenberg (2010) Coalescence-time distributions in a serial founder model of human evolutionary history. *American Society of Human Genetics.*
1. **M DeGiorgio**, M Jakobsson, NA Rosenberg (2009) Explaining worldwide patterns of human genetic variation using a coalescent-based serial founder model of migration outward from Africa. *American Society of Human Genetics.*

CURRENT GROUP MEMBERS

FLORIDA ATLANTIC UNIVERSITY

Zach Cohen, Postdoctoral researcher (joint with Raquel Assis)	09/2025 – Present
Cindy Gilda Santander, Postdoctoral researcher	01/2025 – Present
Wayne Cole, Computer Science Ph.D. student	01/2025 – Present
Manisha Karim, Computer Science Ph.D. student	01/2024 – Present
Mohammad Khan, Computer Science Ph.D. student	01/2024 – Present
Ruhul Amin, Computer Science Ph.D. student	01/2021 – Present
Sandipan Arnab, Computer Engineering Ph.D. student	01/2021 – Present

PAST GROUP MEMBERS

FLORIDA ATLANTIC UNIVERSITY

Andre Luiz Campelo dos Santos, Postdoc and Research Scientist (joint with Raquel Assis)	10/2021 – 07/2025
Ria Kanjilal, Postdoctoral researcher (jointly advised by Raquel Assis)	07/2022 – 08/2024
Garrett Reardon, Artificial Intelligence M.S. student	08/2023 – 03/2024
Fakir Mahmudul Hasan, Electrical Engineering Ph.D. student	05/2021 – 08/2023
Nafis Erfan, Computer Science Ph.D. student (jointly advised by Raquel Assis)	09/2022 – 05/2023
Sudhanshu Sharma, Computer Science Ph.D. student	01/2021 – 08/2022

Kamal Choudhary, Computer Science Ph.D. student	10/2020 – 08/2022
Ernest Guagliata, Computer Science M.S. student	12/2020 – 05/2022
Priya Sigler, Artificial Intelligence M.S. student and Data analyst	08/2020 – 04/2022
Richard Adams, Postdoctoral researcher	08/2019 – 08/2021
Kuumba Adesunloye, Computer Science Ph.D. student	09/2020 – 02/2021

PENNSYLVANIA STATE UNIVERSITY

Mehreen Mughal, Bioinformatics and Genomics Ph.D. student	04/2017 – 09/2020
Alexandre Harris, Molecular Cellular and Integrative Biosciences Ph.D. student	01/2016 – 08/2020
Xiaoheng Cheng, Molecular Cellular and Integrative Biosciences Ph.D. student	01/2016 – 08/2020
Jinguo Huang, Bioinformatics and Genomics Ph.D. student	05/2019 – 12/2019
Hillary Koch, Statistics Ph.D. student	06/2016 – 05/2017
Carlos Prada, Biology postdoctoral fellow (jointly advised by Monica Medina)	10/2014 – 04/2016
Michelle S. Kim, Biology B.S. student	05/2014 – 04/2016
Cheng Xu, Molecular Cellular and Integrative Biosciences rotation student	11/2015 – 12/2015
Matthew J. Schneider, Biology B.S. student	09/2014 – 12/2015
Divya Jagadeesh, Mathematics B.S. student	10/2014 – 12/2014
Joseph M. Gardner, Physics B.S. student	05/2014 – 05/2015
Ashley N. Hall, Mathematics B.S. student	06/2014 – 12/2014

TEACHING

FLORIDA ATLANTIC UNIVERSITY

CAP 4773: Introduction to Data Science and Analytics	08/2025 – Present
CAP 5768: Introduction to Data Science	03/2024 – 05/2024
	01/2023 – 05/2023
	01/2021 – 05/2021
	08/2020 – 09/2020
	01/2020 – 05/2020
CAP 5625: Computational Foundations of Artificial Intelligence	08/2024 – 12/2024
	08/2023 – 12/2023
	01/2023 – 05/2023
	08/2022 – 12/2022
	08/2021 – 12/2021
	08/2020 – 12/2020
	08/2019 – 12/2019

PENNSYLVANIA STATE UNIVERSITY

BIOL 428: Population Genetics	01/2019 – 04/2019
	01/2018 – 04/2018
	01/2017 – 04/2017
	01/2016 – 04/2016
	01/2015 – 04/2015
BIOL 422: Advanced Genetics	08/2018 – 12/2018
	08/2016 – 12/2016
BIOL 220W: Populations and Communities	01/2015 – 04/2015
BMMB 551: Genomics, Human population structure guest lecture	11/2014, 11/2015
BMMB 554: Bioinformatics 1, GWAS guest lecture	03/2014

UNIVERSITY OF CALIFORNIA, BERKELEY

IB 87: Introduction to Research Methods in Biology, HIV evolution guest lecture 07/2012, 07/2013

PROFESSIONAL DEVELOPMENT

FLORIDA ATLANTIC UNIVERSITY

Institute for Academic Leadership Department Chairs Workshop Fall 2025
Team for Assurance of Student Learning Workshop Fall 2025
Cheaters Never Win Workshop Fall 2022

PENNSYLVANIA STATE UNIVERSITY

Evidence-Based Teaching Academy, Center for Excellence in Science Education Summer 2019

DEPARTMENTAL AND UNIVERSITY COMMITTEES

FLORIDA ATLANTIC UNIVERSITY

Artificial Intelligence Task Force 2024 – Present
Chair of Accreditation Committee, Department of Electrical Engineering and Computer Science 2023 – Present
Senator, University Faculty Senate 2022 – Present
Chair of Faculty Search Committee, Department of Electrical Engineering and Computer Science 2023 – 2025
Chair of Student Outreach Committee, Department of Electrical Engineering and Computer Science 2021 – 2024
Faculty Search Committee, Department of Electrical Engineering and Computer Science 2021 – 2023
2019 – 2020
Curriculum Reform Committee, Department of Computer & Electrical Engineering and Computer Science 2021
Open House Planning Committee, Department of Computer & Electrical Engineering and Computer Science 2019

PENNSYLVANIA STATE UNIVERSITY

Coordinating Committee, Institute for Computational and Data Sciences 2018 – 2019
Computer Resources Committee, Department of Biology 2017 – 2019
2015 – 2016
Graduate Awards Committee, Department of Biology 2016 – 2019
Seminar Committee, Department of Biology 2015 – 2019
Evolutionary Genomics Faculty Search Committee, Department of Biology 2017 – 2018

DOCTORAL DISSERTATION COMMITTEES

FLORIDA ATLANTIC UNIVERSITY

Vishnu Vardhan Reddy Chinta, Computer Science 08/2025 – Present
Muhammad Asfand Hafeez, Computer Science 04/2025 – Present
Hayat Ullah, Computer Science 11/2024 – Present
Tsehao Hsu, Computer Science 11/2024 – Present
Richard Acs, Computer Science 06/2024 – Present
Matthew Acs, Computer Science 06/2024 – Present
Perry LaBoone, Computer Science 04/2024 – Present
Parisa Nategh Mohammadzamanbeigi, Electrical Engineering 04/2024 – Present
Peter Worth, Computer Science 01/2024 – Present
Yiran Pang, Computer Science 12/2023 – Present
Antara Anika Piya, Computer Science 05/2023 – Present
Natasha Petrovska, Computer Engineering 08/2022 – Present

Hamid Asefi-Ghamari, Electrical Engineering	12/2020 – Present
Mostapha Al-Saidi, Computer Science	08/2021 – 04/2025
Magdalyn Elkin, Computer Science	12/2020 – 04/2025
Mustafa Shuqair, Electrical Engineering	04/2021 – 12/2024
Fanchen Bao, Computer Science	12/2020 – 12/2023
Mahsa Alemrajabi Firouzabad, Physics	05/2020 – 12/2022
Anak Wannaphaschaiyong, Computer Science	12/2019 – 11/2022

PENNSYLVANIA STATE UNIVERSITY

Guanjue Xiang, Bioinformatics and Genomics	01/2018 – 09/2020
Cory Henderson, Molecular Cellular and Integrative Biosciences	02/2019 – 08/2020
Han Mei, Biochemistry Microbiology and Molecular Biology	09/2018 – 08/2020
Victoria DeLeo, Plant Biology	01/2018 – 08/2020
Nicholas Stoler, Bioinformatics and Genomics	11/2015 – 08/2020
Rahulsimham Vegesna, Bioinformatics and Genomics	12/2018 – 01/2020
Xueyuan Jiang, Molecular Cellular and Integrative Biosciences	03/2017 – 06/2019
Chen Sun, Computer Science and Engineering	08/2016 – 08/2018
Boris E. Rebolledo Jaramillo, Bioinformatics and Genomics	05/2014 – 05/2016

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

John Lindo, Department of Anthropology	09/2014 – 07/2015

MASTERS THESIS COMMITTEES

FLORIDA ATLANTIC UNIVERSITY

John Renne, Artificial Intelligence	03/2025 – Present
David Shvimer, Artificial Intelligence	05/2023 – 12/2024
Danica Blazanovic, Artificial Intelligence	09/2022 – 05/2023
Nicholas Gacharich, Computer Science	03/2021 – 05/2021

OTHER DEPARTMENTAL, COLLEGE, AND UNIVERSITY SERVICE

FLORIDA ATLANTIC UNIVERSITY

Qualifying Examination Proctor, Department of Computer & Electrical Engineering and Computer Science	12/2021 12/2019
Commencement Ceremony Reader, College of Engineering and Computer Science	12/2019

PENNSYLVANIA STATE UNIVERSITY

Poster Judge for ICDS Symposium, Institute for Computational and Data Sciences	Spring 2019
Peer Evaluator for BIOL 406, Department of Biology	Spring 2019
Poster Judge for ICDS Symposium, Institute for Computational and Data Sciences	Spring 2018
Candidacy Exam Evaluation Committee, Molecular, Cellular, and Integrative Biosciences	Spring 2017 Spring 2016
Peer Evaluator for BIOL 133, Department of Biology	Spring 2017
Poster Judge during Institute Day, Institute for Computational and Data Sciences	Spring 2019
Peer Evaluator for BIOL 230W, Department of Biology	Fall 2015
Peer Evaluator for BIOL 464, Department of Biology	Fall 2014

WORKSHOPS AND OUTREACH

I-DeepLearn Summer Workshop for High Schoolers	2021 – 2024
Introduction to Research, Florida Atlantic University High School	11/2021
Summer internship for INdigenous peoples in Genomics (SING)	2011 – 2019
Conservation Genomics Workshop, University of California, Los Angeles	03/2013
Advanced Biology, Berkeley High School	02/2012, 03/2013
Mathematical and Theoretical Biology Institute, Arizona State University	07/2009

CONFERENCE ORGANIZATION

Program Committee, IEEE International Conference on Machine Learning and Applications (ICMLA)	2025
Co-chair, Machine Learning in Genomics section at the *Probabilistic Modeling in Genomics* conference	2025
Program Committee, American Society of Human Genetics Annual Meeting	2016

JOURNAL EDITING

Senior Editor for *Bioinformatics Advances*	2025 – Present
Associate Editor for *Journal of Molecular Evolution*	2024 – Present
Associate Editor for *European Journal of Human Genetics*	2024 – Present
Associate Editor for *Bioinformatics Advances*	2024
Associate Editor for *IEEE/ACM Transactions on Computational Biology and Bioinformatics*	2020 – 2024
Guest Section Editor for *European Journal of Human Genetics*	2022 – 2023
Guest Associate Editor for *PLoS Genetics*	2018

JOURNAL PEER REVIEWING (64 DISTINCT JOURNALS)

Acta Biotheoretica, *Advanced Intelligent Systems*, *Advanced Science*, *American Journal of Human Biology*, *American Journal of Human Genetics, American Journal of Physical* Anthropology, *Annals of Human Biology*, *Applied Sciences*, *Bioinformatics*, *BioSystems*, *Blood*, *BMC Biology*, *BMC Ecology and Evolution*, *BMC Evolutionary Biology*, *BMC Genetics*, *BMC Genomics*, *Briefings in Bioinformatics*, *Cell*, *Cell Genomics*, *Communications Biology*, *Computers in Biology and Medicine*, *Current Biology*, *eLife*, *European Journal of Human Genetics*, *Evolution*, *Evolution Letters*, *Frontiers in Genetics*, *G3: Genes, Genomes, Genetics*, *Genetics*, *Genetics Research*, *Genome Biology and Evolution*, *Genome Medicine*, *Genome Research*, *Human Biology*, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, *iScience*, *Journal of Evolutionary Biology*, *Journal of Heredity*, *Journal of Mathematical Biology*, *Journal of Molecular Biology*, *Journal of Statistical Planning and Inference*, *Mammalian Genome*, *Molecular Biology and Evolution*, *Molecular Genetics and Genomics*, *Molecular Ecology*, *Molecular Ecology Resources*, *Nature*, *Nature Communications*, *Nature Ecology and Evolution*, *Nature Human Behavior*, *Nature Reviews Genetics*, *Pacific Symposium on Biocomputing*, *Philosophical Transactions of the Royal Society B-Biological Sciences*, *PLoS Genetics*, *PLoS One*, *Proceedings of the National Academy of Sciences of the United States of America*, *Proceedings of the Royal Society B-Biological Sciences*, *Science*, *Scientific Reports*, *Sensors*, *Statistical Applications in Genetics and Molecular Biology*, *Systematic Biology*, *Theoretical Population Biology*, *Yearbook of Biological Anthropology*

GRANT AND FELLOWSHIP PEER REVIEWING

Standing Member, National Institutes of Health NIGMS MRAF Study Section	2024 – Present
National Science Foundation DBI/TIP proposal panelist	2024
National Institutes of Health NIGMS R35 (MIRA ESI) proposal panelist	2023, 2024
National Science Foundation DEB proposal panelist	2016, 2022, 2024
National Institutes of Health NIGMS R35 (MIRA EI) proposal panelist (twice)	2023
National Science Foundation BCS Doctoral Dissertation Research proposals (*ad hoc*)	2020

National Science Foundation BCS proposals (*ad hoc*)	2020
Pennsylvania State University, Institute for Computational and Data Sciences seed grants	2017, 2018, 2019
Pennsylvania State University, Center for Human Evolution and Diversity seed grants	2016
Summer Internship for INdigenous peoples in Genomics (SING)	2013, 2014, 2015
Berkeley Biology Fellows Program	2012
Graduate Women in Science	2012

Dr. Mihaela Cardei

Professor
Computer & Electrical Engineering and Computer Science
Florida Atlantic University
777 Glades Road, Boca Raton, FL 33431

Phone: 561- 297-3459
Email: mcardei@fau.edu
Web: https://faculty.eng.fau.edu/mcardei

Research Interest

Algorithm Design and Optimization, Applied Machine Learning and Graph Neural Networks, UAS Path Planning, Wireless Ad Hoc Networks and Wireless Sensor Networks.

Education

Ph.D. in Computer Science, University of Minnesota, Minneapolis, MN, 2003
M.S. in Computer Science, University of Minnesota, Minneapolis, MN, 1999
M.S. in Computer Science, Politehnica University of Bucharest, Romania, 1996
B.S. in Computer Science, Politehnica University of Bucharest, Romania, 1995

Honors and Awards

- Faculty Service and Outreach Award, College of Engineering and Computer Science, Florida Atlantic University, February 2025.
- Outstanding STEM Educator Award, The Engineer's Council, February 2024.
- 2019 Excellent Paper Award of Tsinghua Science and Technology, Distributed Algorithms for Event Reporting in Mobile-Sink WSNs for Internet of Things, *Tsinghua Science and Technology*, Vol. 22, No. 4, Aug. 2017.
- Best paper award, The 35th IEEE International Performance Computing and Communications Conference (IEEE IPCCC), Dec. 2016.
- Best paper award, The 10th IEEE International Conference on Mobile Ad-hoc and Sensor Networks (IEEE MSN), Dec. 2014.
- Researcher of the Year Award, Florida Atlantic University, 2007.
- NSF CAREER Award, 2006.
- Best paper award, The 2nd IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS), Nov. 2005.
- Doctoral Dissertation Fellowship**,** Graduate School, University of Minnesota, 2002.

- Academic Merit Award, Dept. Computer Science & Engineering, University of Minnesota, 1999.

Professional Experience

Professor, FAU, Electrical Engineering and Computer Science Department, Aug. 2014 – present
Associate Dean for Graduate Studies, FAU, College of Engineering and Computer Science, June 2018 – August 2024
Associate Professor, FAU, Computer Science & Engineering, Aug. 2008 – July 2014
Assistant Professor, FAU, Computer Science & Engineering, Aug. 2003 – July 2008
Intern, Honeywell Laboratories, Minneapolis, Apr. 1999 – Oct. 1999
Development Engineer, CoManage Corporation, Sep. 2000 – Jun. 2001

Grant Awards

- Equipment Grant: MSC-Mobile Switching Center, GSN-GPRS Support Node, GSM Base Station (1900 MHz) and OMCR, CDMA Base Station (850 MHz) and BSM Server, FAU NSF/IUCRC, co-PI, Jan 2012 – Dec 2014, $965,000.

- Efficient Protocols and Algorithms for Wireless Networks, FAU NSF/IUCRC, co-PI, Feb 2012 – May 2014, $17,359 (Total grant $100,000).

- Design and Evaluation of Wireless Networks Protocols, FAU Foundation/Tecore Networks, co-PI, Jan 2012 – May 2014, $15,156 (Total grant $100,000).

- Data Link and Communication Protocols for Underwater Laser Sensor Networks, FAU Division of Research (Seed Grant), co-PI, 2012-2013, $20,000.

- Campus-2020 project: Campus Driving and Directions Assistant, FAU NSF/IUCRC, investigator, 2012-2013, $20,240 (Total grant $300,000).

- **NSF CAREER Optimization Problems in Wireless Sensor Network Design and Applications, National Science Foundation (NSF), PI, 06/01/06-01/31/12, $400,000**.

- NSF Research Experiences for Undergraduates (REU), National Science Foundation (NSF), 05/15/09 – 12/15/09 PI, $15,750.

- NSF CISE Instrumentation: Wireless and Sensor Networking Laboratory, National Science Foundation (NSF) & Division of Research at FAU, PI, 09/01/04-09/01/07, $85,851.

- Secure Telecommunication Networks, Secure Routing Protocols for Ad Hoc Wireless Networks, DoD Defense-wide RTDE grant, investigator, 09/01/04-08/31/06, $37,000.

- New Project Development Program, Wireless Sensor Networks Design and Experimentation, FAU Division of Research, PI, 01/01/06-12/31/06, $15,000.

- NSF MRI: Acquisition of a NUMA-based Supercluster for High Performance Computing, National Science Foundation (NSF), co-PI, 08/01/05-07/31/09, $459,065.

- Secure Telecommunication Network, Global Information Grid Simulation, DoD Defense-wide RTDE grant, investigator, 01/09/08-01/09/09, $35,000.

Teaching

Graduate Courses:
- COT 6930: Wireless Networks
- COT 6405: Analysis of Algorithms
- COT 6930: Algorithms for Bioinformatics
- COT 6930: Wireless Networks Design and Optimization
- COT 6930: Distributed Algorithms
- COT 6930: Wireless Sensor Networks

Undergraduate Courses:
- CDA 4500: Introduction to Data Communications
- COT 4400: Design and Analysis of Algorithms
- COT 4420: Introduction to Forma Languages and Automata
- STA 4821: Stochastic Models for CS

Student Supervision

Ph.D. Dissertations Supervised (10)

- Rafael Papa, Fall 2021, "Space-time graph path planning for UAS traffic management systems" (co-advisor)
- Andrew Steinberg, Spring 2021, "Path planning algorithms for unmanned aircraft systems with a space-time graph" (co-advisor)
- Catalina Aranzazu-Suescun, Spring 2019, "Distributed Algorithms for Energy-Efficient Data Gathering and Barrier Coverage in Wireless Sensor Networks" (advisor)
- Yueshi Wu, Fall 2016, "Channel Assignment in Cognitive Radio Wireless Networks" (advisor)
- Amalya Mihnea, Spring 2015, "Channel Assignment in Multi-Radio Networks" (advisor)
- Arny Ambrose, Fall 2011, "A Patient-centric Hurricane Evacuation Management System" (advisor)
- Mirela Marta, Fall 2010, "Mechanisms for Improving Energy Efficiency in Wireless Sensor Networks" (advisor)
- Yinying Yang, Spring 2010, "Mechanisms for Prolonging Network Lifetime in Wireless Sensor Networks" (advisor)
- Shuhui Yang, Summer 2007, "Connected Dominating Set in Wireless Ad Hoc Networks: Variations with Applications" (co-advisor)

- Ali Abu-el Humos, Summer 2005, "Low Latency and Energy Efficient MAC Protocols for Wireless Sensor Networks" (co-advisor)

Master's Theses Supervised (9)

- Rafael Papa, Summer 2018, "Hummingbird: An UAV-aided Energy Efficient Algorithm for Data Gathering in Wireless Sensor Networks" (advisor)
- Andrew Steinberg, Fall 2017, "A Collision Free Drone Scheduling System" (advisor)
- Iana Zankina, Fall 2012, "Campus Driver Assistant on an Android Platform" (advisor)
- Pedro Heshike, Spring 2012, "Implementation of a Mobile Data Collector in Wireless Sensor Networks" (advisor)
- Anthony Marcus, Spring 2011, "Web-based Wireless Sensor Networks Monitoring using Smartphones" (advisor)
- Anupama Sahu, Fall 2010, "Patterns for Wireless Sensor Networks" (advisor; co-advisor Dr. E. Fernandez)
- Arny Ambrose, Fall 2008, "Scheduling for Composite Event Detection in Wireless Sensor Networks" (advisor)
- Mohammad Pervaiz, Summer 2006, "Range Assignment Problem and Security in Wireless Networks" (advisor)
- Wael Awada, Spring 2006, "Energy-efficient Target Coverage in Heterogeneous Wireless Sensor Networks" (advisor)

Professional Organizations

Senior Member, Institute of Electrical and Electronics Engineers (IEEE)

Professional Activities

- Editor for *High-Confidence Computing*, Elsevier and Shandong University, 2021 – present.
- Editor for *Ad Hoc & Sensor Wireless Networks* Journal, OCP Science, September 2009 – September 2012.
- Editor for *Computer Communications* Journal, Elsevier, February 2009 – February 2010.
- Panelist, Women in Computing Empowerment: Challenges and Opportunities in Academia and Industry Panel at the IEEE Intl. Conf. on Artificial Intelligence, Blockchain and Internet of Things (AIBThings) Sept. 2024.
- Panelist, FAU COECS - Women in Engineering and Computer Science (WIECS), Career paths and Graduate Programs, April 2023.
- Panelist, FAU WIECS Panel, April 2025.
- Panelist, National Science Foundation, 2003, 2005, 2008, 2012.
- Organizer of the *Wireless Networking Seminar* at the University of Minnesota, 2001-2003.
- One of the organizers of the *Doctoral Dissertation Fellows Seminar* (2002-2003), event conducted by the Graduate School at the University of Minnesota.

- Co-editor of *Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks*, special issue in the Journal of Parallel and Distributed Computing (JPDC), Vol 65, No 2, Feb. 2005.
- Local arrangement chair for *IEEE MASS'04.*
- Publicity co-chair and workshop co-chair for *The Second International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine'05)*.
- Technical program co-chair for *The International Conference on Systems and Networks Communications (ICSNC)* 2006.
- Poster chair for *ACM MobiHoc* 2008.
- Session chair for IEEE WoWMoM 2008.
- Program Co-Chair COCOA 2019.
- Panel facilitator - FAU ADVANCE Women's Networking Event, March 2019
- Served regularly as TPC member, Session chair, and reviewer for conferences and journals.

Professional Development

- ACUE course "*Designing Learner-Centered Courses*" (February 2025)
- 2025 FAU Mentor and Leader in STEM. *Effective Mentorship and Negotiation Skills* Workshop, HFP Consulting. Sponsored by the NSF ADVANCE-EMPOWER grant at FAU.
- 2024 FAU Leader in STEM. *Leadership and Management Skills* Workshop, HFP Consulting. Sponsored by the NSF ADVANCE-EMPOWER grant at FAU.
- 2019 FAU Woman Leader in STEM. *Female Leaders in Science* Workshop, HFP Consulting. Sponsored by the NSF ADVANCE-EMPOWER grant at FAU.

Florida Atlantic University Services

Member of the EECS Graduate Programs Committee (Jan. 2025 – present)
Member of the UGPC and UGC (Oct. 2017 – Aug. 2024)
Member of the COECS Graduate Programs Committee (June 2018 – Aug. 2024) (ex officio)
Chair UGPC (AY 2022-2023)
Chair of the COECS Graduate Programs (Oct. 2017 – June 2018)
Director of CEECS Graduate Studies (Jan. 2013 – July 2014, Jan. 2015 – June 2018)
Member of FAU Graduate Associate Deans Council (GADC) (June 2018 – June 2022)
Member of the CoECS Graduate Programs (Jan. 2013 – July 2014, Jan. 2015 – Oct. 2017)
Member of the CEECS Executive Committee (Jan. 2013 – July 2014, Jan. 2015 – June 2018)
Member of the CEECS Personnel Committee (2010 – July 2014, Jan. 2015 – Aug. 2016)
Member of the CEECS Resource Committee (2013 – July 2014, Jan. 2015 – June 2018)
Member of the CEECS Graduate Programs Committee (2009 – July 2014, Jan. 2015 – June 2018)
Member of the CoECS CP&D Committee (Aug. 2012 – Jan. 2013)
CSE PhD QE Coordinator (Sept 2009 – Dec 2011)
Member of the CSE Dept. Graduate Programs and Research Committee (2007 – 2009)
Member of the CSE Dept. Executive Committee (2006 – 2007)
Member of the CSE Dept. TA/GA Committee (2005 – 2007)
Member of the FAU University Faculty Senate (2005 – 2006)

Member of the CSE Dept. Labs/Equipment Committee (2003 – 2005, 2008 – 2010)
Graduate Marshal FAU Commencement Ceremony Spring 2007, Spring 2016, Fall 2018
Faculty Advisor of the Alpha Omega Epsilon- Beta Delta Chapter at FAU (July 2012 – July 2014)
Advisor of the MS Information Technology & Management Program (Aug. 2009 – July 2014, Jan. 2015 – June 2018)

Publications

- **Over 9000 citations on Google Scholar**

Conference Papers

1. A. Muresan, M. Cardei, and I. Cardei, Exploring Temporal Heterogeneous Graph Deep Learning and Machine Learning Models for Predicting Student Success, *IEEE International Conference on Artificial Intelligence for Learning and Optimization (ICoAILO 2025)*, Aug. 2025.

2. A. Muresan, M. Cardei, and I. Cardei, Predicting Student Success with Heterogeneous Graph Deep Learning and Machine Learning Models, *Conference on Educational Data Mining (EDM 2025)*, July 2025.

3. C. Mutlu, I. Cardei, and M. Cardei, Space-Time Graph Planner for Unsignalized Intersections with CAVs, *The 16th Annual International Conference on Combinatorial Optimization and Applications (COCOA 2023)*, Dec. 2023.

4. R. Papa, I. Cardei, and M. Cardei, Energy-constrained Drone Delivery Scheduling, *The 14th Annual International Conference on Combinatorial Optimization and Applications (COCOA 2020)*, Dec. 2020.

5. A. Steinberg, M. Cardei, and I. Cardei, UAS Path Planning using a Space-Time Graph, *The 14th Annual IEEE International Systems Conference (SysCon 2020)*, Aug. 24 – Sep. 20, 2020.

6. C. Aranzazu-Suescun and M. Cardei, UAV-aided Weak-Barrier Coverage with Adaptive Sensor Rotation, *The 13th Annual IEEE International Systems Conference (SysCon 2019)*, Apr. 2019.

7. I. Cardei, M. Cardei, and R. Papa, UAV-enabled Data Gathering in Wireless Sensor Networks, *37th IEEE International Performance Computing and Communications Conference*, Nov. 2018.

8. C. Aranzazu-Suescun and M. Cardei, Networking Protocols for Wireless Sensor Networks with Mobile Sink, *LACCEI International Multi-Conference for Engineering, Education, and Technology*, Jul. 2018.

9. C. Aranzazu-Suescun and M. Cardei, Weak-Barrier Coverage with Adaptive Sensor Rotation, *The 12th Annual International Conference on Combinatorial Optimization and Applications (COCOA 2018)*, Dec. 2018.

10. M. Cardei, I. Cardei, and A. Steinberg, UAS Trajectory Scheduling System, *IEEE Systems Conference*, Apr. 2018.

11. C. Aranzazu-Suescun and M. Cardei, Spatio-Temporal Event Detection and Reporting in Mobile-Sink Wireless Sensors Networks, *The 36th IEEE International Performance Computing and Communications Conference (IPCCC)*, Dec. 2017.

12. C. Aranzazu-Suescun and M. Cardei, Reactive Routing Protocol for Event Reporting in Mobile-Sink Wireless Sensor Networks, *The 13th ACM International Symposium on QoS and Security for Wireless and Mobile Networks*, Nov. 2017.

13. Y. Wu and M. Cardei, A Cognitive Radio Approach for Data Collection in Border Surveillance, *IEEE International Performance Computing and Communications Conference (IPCCC)*, Dec. 2016.

14. C. Aranzazu Suescun and M. Cardei, Event-based Clustering for Composite Event Detection in Wireless Sensor Networks, *IEEE International Performance Computing and Communications Conference (IPCCC)*, Dec. 2016 (***Best Paper Award***).

15. C. Aranzazu Suescun and M. Cardei, Unmanned Aerial Vehicle Networking Protocols, *LACCEI International Multi-Conference for Engineering, Education, and Technology*, Jul. 2016.

16. A. Mihnea and M. Cardei, Methods to Improve Capacity in Grid Networks, *The 29th International Conference on Computer Applications in Industry and Engineering (CAINE)*, Sept. 2016.

17. Y. Wu, D. Raviv, and M. Cardei, Campus Navigation System with Seamless Real-Time Information, *International Conference on Computers and Their Applications (CATA)*, Apr. 2016.

18. A. Mihnea and M. Cardei, Analysis of Interference for a Multi-Radio Channel Assignment Algorithm, *International Conference on Computers and Their Applications (CATA)*, Apr. 2016.

19. Y. Wu and M. Cardei, Distributed Algorithm for Mending Barrier Gaps via Sensor Rotation in Wireless Sensor Networks, *The 9th Annual International Conference on Combinatorial Optimization and Application (COCOA 2015)*, Dec. 2015.

20. Y. Wu and M. Cardei, Robust Topology using Reconfigurable Radios in Wireless Sensor Networks, *IEEE International Conference on Mobile Ad-hoc and Sensor Networks (MSN 2014),* Dec. 2014 (***Best Paper Award***).

21. M. Cardei and Y. Wu, Using Reconfigurable Radios to Increase Throughput in Wireless Sensor Networks, *IEEE International Conference on Mobile Ad-hoc and Sensor Networks (MSN 2014)*, Dec. 2014.

22. A. Mihnea and M. Cardei, A Robust Channel Assignment Method for Multi-Radio Networks, Principles, *Systems and Applications of IP Telecommunications (IPTComm 2014)*, Sept. 2014.

23. A. Mihnea and M. Cardei, Bounds on Capacity in Multi-Channel Grid Networks, *Wireless Telecommunications Symposium (WTS 2014)*, Apr. 2014.

24. M. Cardei and A. Mihnea, Channel Assignment in Cognitive Wireless Sensor Networks, *International Conference on Computing, Networking and Communications (ICNC 2014)*, Feb. 2014.

25. M. Cardei and A. Mihnea, Distributed Protocol for Channel Assignment in Cognitive Wireless Sensor Networks, *IEEE International Performance Computing and Communications Conference (IPCCC 2013)*, Dec. 2013.

26. M. Cardei, B. Jones, and D. Raviv, A Pattern for Context-Aware Navigation, *Conference on Pattern Languages of Programs (PLoP 2013)*, Oct. 2013.

27. D. Rashkin, F. Dalgleish, I. Cardei, B. Ouyang, A. Vuorenkoski, and M. Cardei, Experimental Validation of an Undersea Free Space Laser Network Simulator in Turbid Costal Conditions, *Proc. SPIE* 8724, *Ocean Sensing and Monitoring* V, 872404 (June 3, 2013); doi:10.1117/12.2019192, Jun. 2013.

28. M. Cardei, I. Zankina, I. Cardei, D. Raviv, Campus Assistant Application on an Android Platform, *IEEE SoutheastCon 2013*, Apr. 2013.

29. B. Furht, V. Aalo, V. Aalo, A. Agarwal, I. Cardei, M. Cardei, N. Erdol, S. Huang, H. Kalva, T. Khoshgoftaar, I. Mahgoub, O. Marques, M. Petrie, D. Raviv, V. Ungvichian, H. Zhu, Creating Entrepreneurial University, *International Conference of Education, Research and Innovation (ICERI 2013)*, Nov. 2013.

30. D. Rashkin, I. Cardei, M. Cardei, F. Dalgleish, and T. Giddings, Detector Noise Model Verification for Undersea Free Space Optical Data Links, *MTS/IEEE Oceans 2012*, Oct. 2012.

31. M. Cardei, A. Marcus, I. Cardei, and T. Tavtilov, Web-based Heterogeneous WSN Integration using Pervasive Communication, *IEEE International Performance Computing and Communications Conference (IPCCC 2011)*, Nov. 2011.

32. M. Cardei, E. B. Fernandez, A. Sahu, and I. Cardei, A Pattern for Sensor Network Architectures, *Asian Conference on Pattern Languages of Programs (AsianPLoP 2011)*, Oct. 2011.

33. A. Ambrose, M. Cardei, and I. Cardei, Patient-centric Hurricane Evacuation Management System, *IEEE International Performance Computing and Communications Conference (IPCCC 2010)*, Dec. 2010.

34. M. Fonoage, M. Cardei, and A. Ambrose, A QoS Based Routing Protocol for Wireless Sensor Networks, *IEEE International Performance Computing and Communications Conference (IPCCC 2010)*, Dec. 2010.

35. A. Sahu, E. B. Fernandez, M. Cardei, and M. VanHilst, A Pattern for a Sensor Node, *Conference on Pattern Languages of Programs (PLoP 2010)*, Oct. 2010.

36. M. Marta, Y. Yang, and M. Cardei, Energy-efficient Composite Event Detection in WSNs, *International Conference on Wireless Algorithms, Systems and Applications (WASA'09)*, Aug. 2009.

37. Y. Yang, A. Ambrose, and M. Cardei, Sensor Scheduling Mechanisms for Composite Event Detection in Wireless Sensor Networks, *INFOCOM 2009, Student Workshop*, Apr. 2009.

38. Y. Yang and M. Cardei, Sensor Deployment for Composite Event Detection in Mobile WSNs, *International Conference on Wireless Algorithms, Systems and Applications (WASA'08)*, Oct. 2008.

39. M. Marta and M. Cardei, Using Sink Mobility to Increase Wireless Sensor Networks Lifetime, *IEEE Intl. Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM'08)*, Jun. 2008.

40. M. Cardei, Y. Yang, and J. Wu, Non-Uniform Sensor Deployment in Mobile Wireless Sensor Networks, *IEEE Intl. Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM'08)*, Jun. 2008.

41. S. Yang, J. Wu, and M. Cardei, Efficient Broadcast in MANETs Using Network Coding and Directional Antennas, *IEEE INFOCOM 2008*, Apr. 2008.

42. J. Wu, S. Yang, and M. Cardei, On Maintaining Sensor-Actor Connectivity in Wireless Sensor and Actor Networks, *IEEE INFOCOM 2008*, Apr. 2008.

43. Y. Yang and M. Cardei, Movement-Assisted Sensor Redeployment Scheme for Network Lifetime Increase, *ACM/IEEE Intl. Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWIM'07)*, Oct. 2007.

44. M. Cardei, J. Wu, and S. Yang, Fault-Tolerant Topology Control for Heterogeneous Wireless Sensor Networks, *IEEE Intl. Conf. on Mobile Ad-hoc and Sensor Systems (MASS'07)*, Oct. 2007.

45. M. Cardei, M. O. Pervaiz, and I. Cardei, Energy-Efficient Range Assignment in Heterogeneous Wireless Sensor Networks, *International Conference on Wireless and Mobile Communications (ICWMC'06)*, Jul. 2006.

46. W. Awada and M. Cardei, Energy-Efficient Data Gathering in Heterogeneous Wireless Sensor Networks, *IEEE Intl. Conf. on Wireless and Mobile Computing, Networking and Communications (WiMob'06)*, Jun. 2006.

47. S. Yang, F. Dai, M. Cardei, and J. Wu, On Multiple Point Coverage in Wireless Sensor Networks, *The 2nd IEEE Intl. Conf. on Mobile Ad-hoc and Sensor Systems (MASS'05)*, Nov. 2005 (***Best Paper Award***).

48. M. Lu, J. Wu, M. Cardei, and M. Li, Energy-Efficient Connected Coverage of Discrete Targets in Wireless Sensor Networks, *International Conference on Computer Networks and Mobile Computing (ICCNMC'05)*, Aug. 2005.

49. M. Cardei, J. Wu, M. Lu, and M. O. Pervaiz, Maximum Network Lifetime in Wireless Sensor Networks with Adjustable Sensing Ranges, *IEEE Intl. Conf. on Wireless and Mobile Computing, Networking and Communications (WiMob'05)*, Aug. 2005.

50. J. Wu, M. Cardei, F. Dai, and S. Yang, Extended Dominating Set in Ad Hoc Networks Using Cooperative Communication, NETWORKING 2005, May 2005.

51. M. Cardei, M. Thai, Y. Li, and W. Wu, Energy-Efficient Target Coverage in Wireless Sensor Networks, *IEEE INFOCOM 2005*, Mar. 2005, Miami, USA.

52. M. Cardei, J. Wu and S. Yang, Topology Control in Ad hoc Wireless Networks with Hitch-hiking, *The First IEEE International Conference on Sensor and Ad hoc Communications and Networks (SECON04)*, Oct. 2004, Santa Clara, USA.

53. M. Cardei, J. Wu and S. Yang, Low Power Hitch-hiking Broadcast in Ad Hoc Wireless Networks, *NSF International Workshop on Theoretical Aspects of Wireless Ad Hoc, Sensor and Peer-to-Peer Networks (TAWN04)*, Jun. 2004, Chicago, USA.

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Book & Book Chapters

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EDUCATION

1996 - 2002 BSc, Istanbul, Marmara University, Computer Engineering (English)
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2004 - 2006 MSc, Istanbul, Istanbul Technical University, Engineering Management
Evaluated by Josef Silny & Associates

2009 - 2014 PhD, Istanbul, Marmara University, Informatics
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Data Mining and Machine Learning Laboratory

TEACHING AND RESEARCH EXPERIENCE

Florida Atlantic University, Boca Raton, FL **December 2023 –**
Department of Electrical Engineering and Computer Science
Assistant Professor of Teaching

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Department of Computer Science **June 2022 – December 2023**
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Keiser University, Pembroke Pines, FL
College of Advanced Technology **October 2021 – June 2022**
Instructor

Bolu Abant Izzet Baysal University, Turkey **November 2014 – August 2021**
Department of Computer Engineering
Assistant Professor

Undergraduate Courses Taught: Introduction to Algorithms, Software Design, Theory of Computation, Compiler Construction, Software Engineering, Concepts of Parallel and Distrubuted Processing, Introduction to Data Science, Object Oriented Programming with Java, Data Structures and Algorithms, Automata Theory, Design Patterns, Operation Systems, Database Management Systems, Python Programming

Graduate Courses Taught: Introduction to Machine Learning, Database Systems and Security, Data Warehousing, Software Engineering,

PUBLICATIONS

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S. Eswaramoorthi, Nazek Alessa, M. Sangeethavaanee, Safak Kayikci, Ngawang Namgyel, “Mixed Convection and Thermally Radiative Flow of MHD Williamson Nanofluid with Arrhenius Activation Energy and Cattaneo–Christov Heat-Mass Flux”, Journal of Mathematics, vol. 2021, Article ID 2490524, 16 pages, 2021. https://doi.org/10.1155/2021/2490524

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Senem Aktas, Safak Kayikci (2021), “Computing Turkish Movie Stars Screen Time Using Deep Convolutional Networks”, 6th International Mardin Artuklu Scientific Researches Conference, June 2021, Mardin, Turkey

Ceren Gulen, Safak Kayikci (2021), “Hasta Sikayetlerinde Hafif Gradyan Artirma Modeli Kullanara Tibbi Tanilarin Siniflandirilmasi”, 6th International Gap Mathematics-Engineering-Science and Health Sciences, July 2021, Sanliurfa, Turkey

Seda Postalcioglu, Safak Kayikci (2021), “Implementation of Waste Classification System Using Deep Learning”, IV. International Icontech Symposium on Innovative Surveys in Positive Sciences, July 2021, Adana, Turkey

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Kayikci Safak (2020), Convolutional Autoencoder Model for Reproducing Fingerprint, International Conference on Advanced Technologies, Computer Engineering and Science (ICATCES 2020), Jun 03-05, 2020 / Karabuk, TurkeyComputer Engineering and Science (ICATCES) 03-05 Jun 2020 / Karabuk, Turkey "Best Conference Paper Award"

Kabakus Talha, Kayikci Safak (December 2019), Revealing Polarities of Emojis, MAS 10th International European Conference on Mathematics, Engineering, Natural Medical Sciences; ISBN:978-605-7811-37-0

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Scientific Developments, Chapter Name: (Evaluations and Developments in Human Computer Interaction) (2019)., Kayikci Safak, Gece Akademi, Editor: Mehmet Dalkilic, Basim sayisi:1, Sayfa Sayisi 9, ISBN:9786057852120, (Book Chapter)

Theoretical Investigations and Applied Studies in Engineering, Chapter Name:(Principles of Classical Genetic Algorithms in Evolutionary Models) (2019)., Kayikci Safak, Ekin Kitabevi, Editor: Ozseven Turgut, Basim sayisi:1, Sayfa Sayisi 14, ISBN:9786053278566, (Book Chapter)

Kayikci Safak (2019). Classification of Turkish Cuisine with Deep Learning on Mobile Platform, 4th International Conference on Computer Science and Engineering (UBMK) (IEEE)

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RESEARCH PROJECTS

1. TUBITAK 1507 (Scientific and Technological Research Council of Turkey – SME R&D Start-up Support Program) ((2018 – 2020) - Consultant) – Parcel Inquiry in Zoning Plans Prepared With Vector Drawings And Developing An Artificial Intelligence Model That Provides Automatically Creating Draft Plans For Selected Parcels. Project No: 7180223
   Technologies Used : PL/SQL programming on Oracle 12c database, Java Spring Framework (backend), Javascript and node.js (frontend), R programming (neural network package)

2. TUBITAK 1003 (Scientific and Technological Research Council of Turkey – Priority Areas R&D Projects Support Program) ((2018 – 2021) Researcher) – Ecological Flow Estimation Model and Application for Rivers. Project No: 116Y447
   Technologies Used : MySQL 8.0 database, Javascript and node.js, react.js (frontend), Pyhton programming (for LSTM and Boosting algorihtms)

3. BAIBU University Scientific research project (BAP (2018-2019) – Project Manager) – Usage of Augmented Reality in Education
   Technologies Used : C# programming, Vuforia Engine Library (augmented reality)

4. BAIBU University Scientific research project (BAP (2018-2019) – Project Manager) – Chess Playing Robot Arm Design with Recognizing Opponent's Facial Expression –winner of two robotic competitions.
   Technologies Used :Arduino iot, Stockfish Chess Engine, Python programming (chess and face api)

INDUSTRY EXPERIENCE

Turkish Economic Bank (TEB) BNP Baribas and ING Bank **2011 – 2014**
Worked as Project Leader

Project and team management on alternative distribution channels like internet and intranet banking applications. Projects : ING Bank intranet portal development, TEB BNP Baripas core banking applications

Havelsan **2008 – 2011**
Worked as Senior Software Engineer

Software developer in the field of defense and command control systems with native Java. Migration applications from Sun Solaris to Linux OS. Projects: GENESIS Combat Management System (SYS) development , MILGEM National Ship development

IBM Turkey **2006 – 2008**
Worked as WebSphere Technical Consultant

Software developer and WebSphere technical consultant in the field of banking and alternative distribution channels. Technical Consultancy for IBM WebSphere Product Group as Sun Microsystems (Oracle) Certified Java Programmer (SCJP)

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Professional Summary

Full-time faculty with a passion for teaching and integrating research for advancement of CS education. Experienced with diverse student body and inclusion. Faculty advisor to MSc Data Science program as well as SWE, Girls Who Code, and AEO Sorority. Experienced with graduate course assessments through SACS. Awarded the Faculty of the Year by the 9th Annual FAU Women's Leadership Institute in 2024. Invitation to attend the NSF IUSE summit in June 2024 as a perspective PI. Faculty travel grant awarded for ACM SIGCSE 2023. Selected to attend 2023 NSF Instructor Workshop for CDER. Winner of the 2022 junior Faculty teaching award by the college of Engineering and CS at FAU. Selected as one of FAU Women Leaders in STEM for both 2019 and 2024.

Employment History

Associate Professor of Teaching, Dept. of EECS, Florida Atlantic University, FL — August 2024 - Current

Senior Instructor, Dept. of EECS, Florida Atlantic University, FL — Aug 2023 – July 2024
Promotion effective through the Promotion &Tenure Review

Division of Research Associate, Florida Atlantic University, FL — Aug 2022 - Current
Working on proposals in the area of CS education

Instructor, Department of EECS, Florida Atlantic University, FL — Aug 2019 – July 2023
Teaching core CS courses, CS1, CS2, Data Structures using C/C++ and Python. Graduate program advising in DS/CE, Graduate program assessment committee

Adjunct Instructor, Dept of CEECS, Florida Atlantic University, FL — Fall 2015, Spring 2017
Teaching courses on a term-by-term basis for engineering majors

R&D Engineer, Advanced Tech Development, Newell Brands, Boca Raton, FL — 2017 - 2018
Technology development for next-gen consumer health and wellbeing products

Instructor, Department of ECE, Southern Illinois University Carbondale, IL — 2013 -2014
Teaching courses and advising students at both UG/Gr level

Graduate Research Intern, Si Photonics Lab, Intel, Santa Clara, CA — 2011 – 2012
Research and development of Si Photonics links for data centers

Education

PhD in Electrical Engineering, University of Waterloo, Waterloo, Canada — 2012
Thesis: WDM-PONs for Fiber to the Home Applications

MSc in Electrical Engineering, University of Ottawa, Ottawa, Canada — 2005
Thesis: Self-Similar Internet Traffic Modeling & Clos-like Packet Switch Architectures

BSc in Electrical Engineering, Isfahan Uni of Tech, Isfahan, Iran — 2002
Senior project: Implementing a Viterbi Decoder through FPGA Using Verilog

Courses Taught at FAU

Regular Courses

COP3410: Fully Online Course Development with COCE for QM — 2025 - Ongoing

COP3035: Python Programming — 2024 - Current
Core CS Course: Using Python programming language
Enrollment > 250

COP2220: Programming I — 2019 - 2023
Core CS Course: Using C programming language
Enrollment > 100 (online and in-person sections)

COP3014: Programming II — 2020 - 2024
Object-oriented programming in C++
Enrollment > 120 (online and in-person sections)

COP3410: Data Structures and Algorithms in Python — 2022 - Current
For students enrolled in BA in CS, Python track
Enrollment > 120

EGN5930: Analytical Methods in Engineering — Spring 17
Engineering math course for incoming graduate students
Enrollment ~ 20

Bootcamp Courses

Python Programming for Data Science — August 22
5 days/15-hours of Python for general audience with data science tools

Python Programming Bootcamp — August 21, May 21
5 days/10-hours of Python for general audience along with hands on code and quizzes

Courses Taught at SIUC

ECE 296: Software Tools for Engineers (*New Course*) — Fall 13, Fall 14
Fall 2014: # of enrolled students: 25 – Instructor rating 4.4, Course rating 4.1
Fall 2013: # of enrolled students: 9 – Instructor rating 5.0, Course rating 4.6

ECE 356: Systems & Control (*New Development*) — Fall 14
Fall 2014: # of enrolled students: 13 – Instructor rating 3.4, Course rating 3.3

ECE 476/593c: Introduction to Broadband Communications (*New Course*) — Fall 14
Fall 2014: # of enrolled students: 39 – Instructor rating 3.8, Course rating 3.7

ECE 448: Photonics (*New Development*)
Spring 2014: # of enrolled students: 6 – Instructor rating 4.8, Course rating 3.8 — Spring 14

ECE 593: Optoelectronic Devices (*New Course*) — Fall 13
Fall 2013: # of enrolled students: 6 – Instructor rating 4.5, Course rating 4.7

Service

Department/School service

Graduate Faculty Advisor, MSc programs in DS and CE, Dept of EECS, FAU — 2022 – May 2025
Admission and advisement of the popular MS DS program

EECS Program Assessment Committee, Dept of EECS, FAU — 2021 - Present
Conducting Graduate Courses Assessment and data collection for SAC Assessment

Student Outreach Committee Member, Dept of EECS, FAU — 2021- 2023
Analyzing Strategies for increasing enrollment of G/UG students

Providing Reference Letters on a regular basis — 2019 - Present
For scholarships, admissions into law school and graduate school, NIW green card applications, tenure and promotion applications, and career opportunities

Panelist for Women in Engineering and CS, College of Engineering, FAU — April 2023
Topic: Why graduate school?

College Service

Faculty Advisor for Girls Who Code Society — Jan 2024 – Current

Faculty Advisor for Alpha Omega Epsilon Sorority — Aug 2023 – Current

Faculty Advisor for SWE (Society of Women Engineers) — Aug 2023 - Current

Faculty Search Committee, Harbor Branch Oceanic Institute, FAU — 2019 - 2022
Search for research professor in Optical Engineering

University service

Implementation of the Learning Assistant (LA) Model into early programming classes — April 2025
FAU QEP Plan
Judge for 3 Minute Thesis Competition (3MT), FAU Graduate College — April 2022
FAU Graduate College
Judge for Graduate Research Day, FAU — April 2020
Graduate & Professional Student Association

Service to the Discipline/Profession

Program Committee for ACM SIGCSE Technical Symposium — 2023-2025
Computing Research Papers, Posters, Birds of a Feather

External Reviewer, CDER-Book-2024 — July 2025

Session Chair, IEEE HONET Conference, FAU, Boca Raton, FL — 2023

Title III Hispanic Serving Institution STEM Articulation Collaboration FAU – PBSC — 2022
Meeting and discussing initiatives, ideas for research/teaching collaborations
Panelist for Women in Academia, IEEE Progress Workshop, ICIP 2020 — Oct 2020
Discussion of issues facing women in the engineering workforce and academia

Service to the Community/Public

Career Day at Career Day at AD Henderson University School, Boca Raton, FL — Feb 2024
Presenting to 3rd graders about machine language and binary numbers.

Judge for Congressional App Challenge, High School Competition — Oct 2023 & 2024
Office of Congressman Jared Moskowitz, 23rd District of Florida

Career Day at AD Henderson University School, Boca Raton, FL — Feb 2023
Presenting to 2nd graders about CS algorithms and profession

Judge for Congressional App Challenge (CAC), High School Competition — Oct 2020 & 2021
Office of Congressman Ted Deutch, Boca Raton, FL

Professional Development

Selected for Professional Development for Teaching-Track Faculty Workshop, Hosted by CRA, Pre-symposium Event at SIGCSE 2025, Pittsburgh, PA — Feb 2025

Selected to attend NSF IUSE SUMMIT as a perspective PI — June 2024
Awarded by AAAS and NSF for STEM Education

Selected for Leadership and Management Skills Course, Office of Provost, FAU — Feb 2024
Conducted by hfp Consulting and supported by NSF Advance Grant

Selected for NSF Center for Parallel and Distributed Computing (CDER) Training Workshop — Aug 2023
Louisiana State University

Cheaters Never Win Workshop — Aug 2022
Testing and Certification, FAU

An Introduction to Computational Thinking for Every Educator — Summer 2021
International Society for Technology in Education (ISTE)

Master Class on Effective Teaching Skills — Jan 2021
American Society for Engineering Education (ASEE)

Teaching Online Orientation Course — March 2020
Center for Online and Continuing Education (COCE), FAU

Flex/Online Teaching Course — March 2020
Center for Online and Continuing Education (COCE)

Selected as FAU Woman Leader in STEM Training, Supported by NSF ADVANCE — Nov 2019
FAU Chapter of the Association of Women in Science (AWIS) and Advance Leadership Selection

Honors and Awards

Faculty Excellence Award, College of Engineering and WIECS, FAU, USA	April 2025
Faculty of the Year Award, 9th Annual Women's Leadership Institute, FAU, USA	February 2024
ACM SIGCSE Travel Grant, SIGCSE 2023 Technical Symposium, Toronto, Canada	March 2023
Junior Faculty Teaching Award, College of Engineering and CS, FAU, USA	2022
FAU 2019 Woman Leader in STEM, FAU, USA	2019
NSERC Industrial R&D Postdoctoral Fellowship, Canada	2012
SPIE Scholarship in Optical Science and Engineering, USA	2010
NSERC Alexander Graham Bell Canada Graduate Scholarship, Canada	2009 - 2011
President's Graduate Scholarship, University of Waterloo, Canada	2009 - 2011
Faculty of Engineering Award, University of Waterloo, Canada	2009 & 2010
UW Provost Doctoral Entrance Award for Women in Engineering, Waterloo, Canada	2008

Supervising of Graduate/Undergraduate Students

Ayesha Fatima, "Learning Assistant Model for Computer Programming Classes: Effectiveness and Outcomes"	In Progress
Abdulhakim Alsaiari, "Deep Learning for Intrusion Detection Systems (IDS) applied to Smart Grids" *PhD Thesis Committee member*	In Progress
Munid Alanazi, "Advances in Human Activity Recognition: Integrating Sensor Fusion and Artificial Intelligence Techniques" *PhD Thesis Committee member*	Graduated 2024
Vincent Stafford, " Quantum Computing" *UG Research Advisor*	Summer 2023
Jennifer Gogova, "Digital Transformation of Healthcare Using AI" *MSc Thesis Committee member, Dept of EECS, FAU*	Graduated 2023
Ahmad Arab, "Neuromorphic Photonics" *NSF - LEARN UG Faculty Research Mentor, Dept of EECS, FAU*	2019 - 2020
Luae' Al-Tarawneh, "Dynamic Adaptation of Bandwidth Granularity for Multipath Routing in Elastic Optical OFDM Networks" *PhD co- advisor, Dept of ECE, Southern Illinois University*	Graduated 2016

P Selzer, M. Ladd, C. Siedel and P Mooney, "Reflow Solder Oven" Nov 2013
Faculty advisor, Undergraduate Senior Project, Dept of ECE, Southern Illinois University

Research Publications

Refereed Journal Articles

1. Altarawneh L, **Taebi S**, Minimizing Blocking Probability in Elastic Optical Networks by Varying the Bandwidth Granularity Based on Optical Path Fragmentation, *Photonics J.*, Vol. 4, Issue 20, 2017.
2. **Taebi S.** and Saini S.S., L-Band Polarization Independent Reflective SOA for WDM-PON Applications, *IEEE Photonics Technology Letters*, Vol. 21, issue 5, pp. 334-336, 2009.
3. Paredes S.A., **Taebi S.** and Hall T.J., Packet-Loss-Robust Load-Balancing Switch with Distributed Extended Cross-Point Queues, *IET Communications*, Vol. 3, pp. 123-134, 2009.
4. **Taebi S**., Khorsaninejad M. and Saini S.S., Modified Fabry-Perot Interferometer Method for Waveguide Loss Measurement, *Applied Optics*, Vol. 47, Issue 35, pp. 6625-6630, 2008.

Refereed Proceedings

1. Altarawneh L. and **Taebi S.**, Linear Dynamic Adaptation of the BW Granularity Allocation for Elastic Optical OFDM Networks, *International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS)*, Chicago, Illinois, pp. 1-7, 2015.
2. Altarawneh L. and **Taebi S.,** Bandwidth Granularity Adaptation for Multipath Provisioning in Elastic Optical OFDM-Based Networks, *IEEE International Conference on Electro/Information Technology (EIT)*, pp. 236-240, Dekalb, Illinois, 2015.
3. Altarawneh L and **Taebi S.**, Dynamic Adaptation of Bandwidth Granularity for Multipath Routing in Elastic Optical OFDM Networks, *OSA Conference on Lasers and Electro-Optics (CLEO)*, San Jose, California, paper JTh2A.71, 2015.
4. **Taebi S**. and Saini S.S., Effect of AWG Filtering on Spectrally-Sliced WDM-PONs Deploying RSOAs, *IEEE Communications and Photonics Conference and Exhibition (ACP)*, Shanghai, China, pp. 525- 526, 2010.
5. **Taebi S.** and Saini S.S., Photonic Integrated Circuits for WDM-PON Applications, *SPIE Photonics North*, Niagara Falls, Canada, 2010.
6. **Taebi S**., Saini S.S. and Dagenais M., Experimental Demonstration of Injection-Locked Fabry-Perot Lasers with Integrated Phase Modulators, *IEEE Annual Lasers and Electro Optics Society Meeting (LEOS),* pp. 652-653, 2009.
7. **Taebi S.** and Saini S. S., Injection Locked FP Lasers with Integrated Phase Modulators for WDM-PON Applications, *IEEE International Conference on Indium Phosphide & Related Materials (IPRM),* Long Beach, California, pp.282-284, 2009.
8. **Taebi S.** and Saini S.S., Theory and Practice of a Polarization Independent Reflective SOA for WDM- PON Applications, *IEEE Optical Fiber Communication & Optoelectronic Exposition & Conference,* China, pp. 1-3, 2008.
9. **Taebi S.** and Saini S.S., Polarization Independent Reflective Semiconductor Optical Amplifiers for WDM-PON Applications. *Photonics North*, Montreal, Canada, 2008.
10. **Taebi S.** and Saini S.S., Modified Fabry-Perot Method for Waveguide Loss Measurement. *Photonics North*, Montreal, Canada, 2008.
11. Lu Z.G., Liu J.R., **Taebi S.**, Song Y., Zhang X.P. and Hall T.J., Ultra-Broadband Wavelength Conversion System by Using Photonic Crystal Fiber, *SPIE Passive Components and Fiber-Based Devices IV*, Vol. 6781, 5 pages, 2007.

12. Lu Z.G,, Liu J.R., Raymond S., Poole P.J., Barrios P.J., Haffouz S., Poitras D., Pakulski G., **Taebi S**, Song Y., Zhang X.P. and Hall T.J., Quantum-Dot Semiconductor Waveguide Devices. *SPIE Optoelectronic Materials and Devices II*, Vol. 6782, 7 pages, 2007.
13. Lu Z. G., Liu J. R., Raymond S., Poole P. J., Barrios P. J., Pakulski G., Poitras D., Sun F. G., **Taebi S.** and Hall T.J., Ultra-Broadband Quantum-Dot Semiconductor Optical Amplifier and Its Applications, *IEEE Optical Fiber Communication Conference (OFC)*, pp.1-3, 2007.
14. **Taebi S.**, Paredes S.A. and Hall T.J., Load-Balancing in Clos-Like Packet Switches with Distributed Cross-Point Queues. *IEEE Workshop on High Performance Switching and Routing (HPSR), Hong Kong,* pp. 13-17, 2005.
15. Abdo A., Bishtein V., Clark S., Dicorato P.G., Lu D.T., Paredes S.A., **Taebi S.** and Hall T.J., Adaptive Packet Switch with an Optical Core (Demonstrator). *Photonics North,* Ottawa, Canada, Vol. 5579, pp. 548-559, 2004.
16. **Taebi S.**, Paredes S.A., and Hall T.J., Performance of a Packet Switch with an Optical Core Under Self- Similar Traffic. *IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)*, Niagara Falls, Canada, Vol. 2, pp. 747-750, 2004.

Patents

Hall T.J, Paredes S.A, **Taebi S**, Compact load balanced switching structures for packet-based communication networks, US Patent 8,254,390, 2012.

Velibor Adzic

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Email: vadzic@fau.edu

Summary

Ten years of experience in algorithm design and software development for video analysis and compression. Seven years of experience in development of intellectual property related to state-of-the-art video coding, including standard-essential patents. Four years of experience in patent mining and mapping as an independent consultant.

Employment

08/2024-present	**Florida Atlantic University, Boca Raton, FL** Assistant Professor of Teaching
06/2018-08/2024	**OP Solutions, Amherst, MA** Research Consultant
10/2016-08/2024	**Videopura LLC, Boca Raton, FL** Co-Founder, Director of R&D
06/2014-09/2015	**Florida Atlantic University, Boca Raton, FL** Visiting Scholar
01/2009-05/2014	**Florida Atlantic University, Boca Raton, FL** Research/Teaching Assistant
05/2013-08/2013	**Mitsubishi Electric Research Laboratories, Cambridge, MA** Research Intern

Education

2015-2016	**Hebrew University of Jerusalem** Postdoctoral Fellowship in Computational Neuroscience
2009-2014	**Florida Atlantic University, Boca Raton** PhD, Computer Science
2001-2005	**College of Electrical Engineering, University of Montenegro** Bachelor of Science (with honors), Computer Science

Recent activities

Development of undergraduate and graduate courses in Computer Science.

Development of patent-pending technologies for Video Coding for Machines (under consideration for the MPEG international standard).

Development of patented methods that are included in the VVC Advance Patent Pool.

Video Coding Expertise

Rate-Distortion Optimization of AVC encoders

Development and implementation of advanced rate-distortion algorithms for the AVC encoders (x264 implementation). Up to 50% gain in comparison with the state-of-the-art encoders in the market. Exploration of mapping options for VP9 encoder for similar gains.

Perceptual Optimization of AVC encoders

Development and implementation of temporal masking algorithms for visually lossless bitrate reduction in AVC encoders (JM and x264 implementations).

Adaptive Coefficient Signaling in HEVC

Development and implementation of motion-based model for coefficient signaling in HEVC (HM implementation). Utilization of perceptual thresholds for coefficient truncation in supra-threshold blocks of moving areas within frames.

Modeling of Objective Quality Metrics

Development, implementation, and testing of objective metrics for video quality assessment. Utilizing human visual system (HVS) characteristics for modifications of objective metrics (PSNR and SSIM). Implementation in the standard frameworks ITU-T (P.1202 and P.1203).

Honors/Awards

FAU DoR Associate, 2024/2025

Tech Runway Launch Competition Winner, VIdeopura LLC 2017.

Fulbright Fellowship, Postdoctoral Research in Israel 2016.

Best Student Paper Award, SPIE Human Vision and Electronic Imaging Conference 2014.

Student Travel Grant, ACM SIGMM for ACM Multimedia – 2012.

Graduate Scholarship, $25000 awarded by Research In Motion – 2009/2010.

First prize, IEEE Graduate Student Research Showcase – 2010.

Top of the class (Rank 1/250), Computer Science, University of Montenegro – 2005.

First prize, National Mathematics Competition, Montenegro – 1998.

Patents

US11006132 - *Methods and systems for adaptive cropping*
US11102498 - *Block-based adaptive resolution management*
US11178416 - *Global motion models for motion vector inter prediction*
US11252433 - *Signaling of global motion vector in picture header*
US11259014 - *Inter prediction in geometric partitioning with adaptive number of regions*
US11284100 - *Candidates in frames with global motion*
US11284104 - *Global motion constrained motion vector in inter prediction*
US11356660 - *Methods and systems of video coding using reference regions*
US11375183 - *Methods and systems for combined lossless and lossy coding*
US11438604 - *Methods and systems for adaptive cropping*
US11438594 - *Block-based picture fusion for contextual segmentation and processing*
US11438603 - *Methods and systems for adaptive cropping*
US11438620 - *Efficient coding of global motion vectors*
US11451800 - *Methods and systems for adaptive cropping*
US11451810 - *Merge candidate reorder based on global motion vector*

Pending (selection out of 50 currently pending)

20220150515A1 - *Adaptive Temporal Filter For An Unavailable Reference Picture*
20210400289A1 - *Methods And Systems For Constructing Merge Candidate List Including Adding A Non- Adjacent Diagonal Spatial Merge Candidate*
20210360271A1 - *Inter Prediction In Exponential Partitioning*
20210360246A1 - *Shape Adaptive Discrete Cosine Transform For Geometric Partitioning With An Adaptive Number Of Regions*
20210360229A1 - *Online And Offline Selection Of Extended Long Term Reference Picture Retention*

Publications

Journal papers

Saurin S Parikh, Damian Ruiz, Hari Kalva, Gerardo Fernández-Escribano, Velibor Adzic. "*High bit-depth medical image compression with HEVC*," IEEE Journal of Biomedical and Health Informatics, vol. 22, no. 2, pp. 552-560, March 2018.

Ray Garcia, Velibor Adzic, and Hari Kalva. *"Adapting Low Bit Rate Skip Mode in Mobile Environment,"* IEEE Transactions on Circuits and Systems for Video Technology, vol. 27, no. 2, pp. 352-365, Feb. 2017

Damián Ruiz, Gerardo Fernández-Escribano, Velibor Adzic, Hari Kalva, José Luis Martínez, Pedro Cuenca. "*Fast CU partitioning algorithm for HEVC intra coding using data mining*," Multimed Tools Appl 76, 861–894 (2017).

Hari Kalva, Homer Chen, Velibor Adzic, Gerardo Fernández-Escribano. "*Guest Editorial: Visual Information Processing and Perception*," Multimed Tools Appl 74, 10053–10056 (2015).

Velibor Adzic, Hari Kalva, and Borko Furht, "*Optimizing video encoding for adaptive streaming over HTTP,*" IEEE Transactions on Consumer Electronics, vol.58, no.2, pp.397-403, May 2012.

Velibor Adzic, Hari Kalva, and Borko Furht "*A survey of multimedia content adaptation for mobile devices,*" Multimedia Tools Appl. 51(1): 379-396 (2011).

Selected conference papers

Velibor Adzic, "*Comparative Analysis of Image Encoders and Compression Effects on Machine Task Performance*," 13th Int'l Symposium on Image and Signal Processing and Analysis (ISPA), Rome, September 2023.

Saurin Parikh, Hari Kalva, Velibor Adzic. "*Evaluation of HEVC compression for high bit depth medical images*," IEEE International Conference on Consumer Electronics (ICCE), 2016.

Damián Ruiz-Coll, Velibor Adzic, Gerardo Fernández-Escribano, Hari Kalva, Jose Luis Martínez and Pedro Cuenca, "*Fast Partitioning Algorithm for HEVC Intra Prediction Using Machine Learning*," IEEE International Conference on Image Processing (ICIP), Paris 2014.

Velibor Adzic, Robert A. Cohen, and Anthony Vetro, *"Temporal perceptual coding using a visual acuity model,"* SPIE Electronic Imaging Conference, February 2014.

Óscar Figuerola Salas, Velibor Adzic, and Hari Kalva, "*Subjective Quality Evaluations Using Crowdsourcing*," 30th Picture Coding Symposium (PCS), 2013, San Jose, CA, USA.

Velibor Adzic, "*What you see is what you should get*," Proceedings of the International conference on Multimedia (MM '12), 2012. ACM, New York, NY, USA, 1441-1444.

Velibor Adzic, Hari Kalva, and Lai-Tee Cheok, "*Adapting video delivery based on motion triggered visual attention*," Proc. SPIE 8499, Applications of Digital Image Processing (October 15, 2012).

Velibor Adzic, Hari Kalva, and Borko Furht, "*Optimized adaptive HTTP streaming for mobile devices*," Proc. SPIE 8135, Applications of Digital Image Processing (September 23, 2011).

Gustavo B. Borba, Humberto R. Gamba, Oge Marques, Aleksandar Colic, and Velibor Adzic "*Comparing figures of merit and image datasets for evaluation of salient region detection algorithms*," The IASTED International Conference on Signal Processing, Pattern Recognition and Applications (SPPRA) 2010, February 17-19, 2010, Innsbruck, Austria.

CURRICULUM VITA

Xingquan (Hill) Zhu, IEEE Fellow, AAIA Fellow, PhD**,** Professor

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Google Scholar: *https://scholar.google.com/citations?user=YhKZXtcAAAAJ&hl=en*

Research Interests

Artificial Intelligence, large scale machine learning, and data mining

Real-time analytics and decision support systems

Biomedical, bioinformatics, and health information systems

Employment

- August 2018 — Professor, Dept. of Electrical Engineering and Computer Science, Florida Atlantic University, FAU, Boca Raton, FL 33431, USA
- August 2012 — Associate Professor, Dept. of Electrical Engineering and Computer Science, Florida Atlantic University, FAU, Boca Raton, FL 33431, USA
- May 2009 — Associate Professor/Professor, Centre for Quantum Computation & Intelligent Systems, Faculty of Engineering & Information Technology, University of Technology, Sydney, Australia
- August 2006 — Assistant Professor, Dept. of Computer Science and Engineering, Florida Atlantic University, FAU, Boca Raton, FL 33431, USA
- October 2002 — Research Assistant Professor, Dept. of Computer Science, University of Vermont, Burlington, VT 05045, USA
- Feb 2001 — Postdoctoral Research Associate, Dept. of Computer Science, Purdue University, West Lafayette, IN 47907, USA

Education

- February 2001 — PhD in Computer Science, Fudan University, China
- Jan.-June 2000 — Intern student, Microsoft Research Asia, Beijing 100080, China
- January 1998 — M.S. in Communication and Electronic Systems, Xidian University, China
- July 1995 — B.S. in Communication Engineering, Xidian University, China

Research Grants (Award Total: $8.5 million; PI Amount: $3.4 million)

Active Research Projects

1. Collaborative Research: PACSP TOOLS: EPICS: Explainable AI Driven Individual Photo-Identification and Tracking for Cost-effective Conservation Study
   Xingquan Zhu (PI), Sarah Milton (Co-PI) , Matthew Ajemian (Co-PI)
   Sponsor: National Science Foundation (NSF) Duration: 2024-2029 Amount: $630,001
2. NSF-CSIRO: Towards Interpretable and Responsible Graph Modelling for Dynamic Systems
   Xingquan Zhu (PI), Laurent Cherubin (Co-PI), Yufei Tang (Co-PI), Siddhartha Verma (Co-PI)
   Sponsor: National Science Foundation (NSF) Duration: 2023-2026 Amount: $600,000
3. Collaborative Research: III: Small: Taming Large-Scale Streaming Graphs in an Open World
   Xingquan Zhu (PI), Laurent Cherubin (Co-PI)
   Sponsor: National Science Foundation (NSF) Duration: 2023-2026 Amount: $300,000
4. Collaborative Research: Implementation: Medium: Secure, Resilient Cyber-Physical Energy System Workforce Pathways via Data-Centric, Hardware-in-the-Loop Training
   Yufei Tang (PI), **Xingquan Zhu** (Co-PI), James H VanZwieten (Co-PI), Zhen Ni (Co-PI)
   Sponsor: National Science Foundation (NSF) Duration: 2023-2027 Amount: $480,000
5. Making the Master's Degree in Artificial Intelligence Accessible to High-Achieving Low-Income Students; Dimitris Pados (PI), Nancy Romance (Co-PI), Stella Batalama (Co-PI), **Xingquan Zhu** (Co-PI), Javad Hashemi (Co-PI)
   Sponsor: National Science Foundation (NSF) Duration: 2020-2026 Amount: $1,000,000
6. NRT-HDR: Graduate Traineeship in Data Science Technologies and Applications
   Borko Furht (PI), Taghi Khoshgoftaar (Co-PI), Ruth Tappen (Co-PI), Elan Barenholtz (Co-PI), Janet Robishaw (Co-PI), **Xingquan Zhu** (Sen. Personnel), Oge Marques (Sen. Personnel), Jinwoo Jang (Sen. Personnel), Hari Kalva (Sen. Personnel)
   Sponsor: National Science Foundation (NSF) Duration: 2020-2025 Amount: $2,400,000

Expired Projects

1. III: Medium: Collaborative Research: KMELIN: Knowledge Mining and Embedding Learning for Complex Dynamic Information Networks
   Xingquan Zhu (PI), Ankur Agarwal (Co-PI), and Dingding Wang (Co-PI)
   Sponsor: National Science Foundation Duration: 2018-2023 Amount: $599,983
2. NSF Student Travel Grant for the 2022 IEEE International Conference on Data Mining (IEEE ICDM 2022); **Xingquan Zhu** (PI)
   Sponsor: National Science Foundation (NSF) Duration: 2022-2023 Amount: $30,000
3. NSF Student Travel Grant for the 2021 IEEE International Conference on Big Data (IEEE BigData 2021); **Xingquan Zhu** (PI)
   Sponsor: National Science Foundation (NSF) Duration: 2021-2022 Amount: $25,000
4. RAPID: COVID-19 Coronavirus Testbed and Knowledge Base Construction and Personalized Risk Evaluation; **Xingquan Zhu** (PI), Michael DeGiorgio (Co-PI), Massimo Caputi (Co-PI)
   Sponsor: National Science Foundation (NSF) Duration: 2020-2021 Amount: $90,000
5. Developing Machine Learning Financial Modeling Algorithms for early-stage technology companies to predict their success, **Xingquan Zhu** (PI), Borko Furht (Co-PI)
   Sponsor: NSF (FAU I/UCRC, FAU Tech-runway) Duration: 2021 – 2022 Amount: $49,520
6. Collaborative Research: Cyber-Training: Pilot: Interdisciplinary Training of Data-Centric Security and Resilience of Cyber-Physical Energy Infrastructures
   Yufei Tang (PI), James VanZwieten (Co-PI), Jason Hallstrom (Co-PI), **Xingquan Zhu** (Co-PI)
   Sponsor: National Science Foundation (NSF) Duration: 2020-2022 Amount: $160,000
7. Artificial Intelligence for Tackling Online Cruelty, Toxicity, and Bullying
   Xingquan Zhu (PI), Sameer Hinduja (Co-PI), Borivoje Furht (Co-PI), and Kevin Lanning (Co-PI)
   Sponsor: FAU College of Eng. & Computer Science Duration: 2020-2021 Amount: $25,000
8. Development of Curriculum and Hands-on Deep Learning Labs for IoT Cybersecurity
   Yufei Tang, **Xingquan Zhu** (Co-PI), Zhuo Lu (Co-PI)

Sponsor: Cyber Florida Duration: 2019-2020 Amount: $60,000

9. Privacy Preserving Protocols for Big Data Analytics
Mehrdad Nojoumian (PI), **Xingquan Zhu** (Co-PI), and Elias Bou-Harb (Co-PI)
Sponsor: FAU College of Engineering and Computer Science; 2019-2020 Amount: $25,000
10. MRI: Acquisition of Artificial Intelligence & Deep Learning (AIDL) Training and Research Laboratory
Xingquan Zhu (PI), Taghi Khoshgoftaar (Co-PI), Dimitris Pados (Co-PI), Hanqi Zhuang (Co-PI), and Laurent Cherubin (Co-PI)
Sponsor: National Science Foundation Duration: 2018-2021 Amount: $652,850
11. Real-Time Bidding Price Optimization; **Xingquan Zhu** (PI)
Sponsor: Bidtellect.com Duration: 2016 – 2019 Amount: $89,915
12. NSF I/UCRC: Machine Learning Algorithms for Uses Cases in Auto Industry
Xingquan Zhu (PI) and Borko Furht
Sponsor: NSF (FAU I/UCRC, JM Family) Duration: 2016 – 2017 Amount: $39,809
13. NSF I/UCRC: Application of Common Machine Learning Algorithms for Uses Cases in Auto Industry – Phase 2; Dingding Wang (PI), **Xingquan Zhu** (Co-PI), and Borko Furht (Co-PI)
Sponsor: NSF (FAU I/UCRC, JM Family) Duration: 2017-2018 Amount: $60,087
14. PFI:AIR - TT: A Clinical Predictive Model Based Smart Decision Support System for Congestive Obstructive Pulmonary Disease (COPD) related Re-hospitalization
Ankur Agarwal (PI), Andrew Duffell, Ravi Behara, and **Xingquan Zhu** (Co-PI)
Sponsor: National Science Foundation (IIP: 1444949) Duration: 2014 – 2016 Amount: $199,594
15. MRI: Acquisition of Big Data Training and Research Laboratory; Taghi Khoshgoftaar (PI), Ramesh Teegavarapu, Hari Kalva, **Xingquan Zhu** (Co-PI), and Pierre-Philippe Beaujean.
Sponsor: National Science Foundation (CNS: 1427536) Duration: 2014-2017 Amount: $600,000
16. Database-centric data analysis of molecular simulations; **Xingquan Zhu** (PI)
Sponsor: National Institutes of Health (subcontract NIH 1R01GM086707-01A1)
Duration: 2010 – 2015 Amount: $ 56,319
17. Comparative Pancreatic Cancer Study Using Discriminative Gene Regulatory Network
Xingquan Zhu (PI)
Sponsor: American Cancer Society Institute Research Grants (ACS-IRG)
Duration: 2009 Amount: $ 30,000
18. ICHECK: Identifying Deception Data with Impact-Sensitive Instance Ranking
Xingquan Zhu (PI) and Xindong Wu (Co-PI)
Sponsor: NSF-EPSCoR Duration: 2005 Amount: $ 25,000
19. Pattern Matching with Wildcards and Length Constraints
Xindong Wu (PI), Abdullah N. Arslan, and **Xingquan Zhu** (Co-PI)
Sponsor: NSF (CCF-0514819) Duration: 2005-2008 Amount: $ 200,000

Industry Research Donation (Total: $300,000.0)

1. FAU Bidtellect Laboratory (https://bidtellect.fau.edu)
Xingquan Zhu (Leading Lab Director)
Sponsor: Bidtellect.com
Duration: 2017-2022 Amount: $ 300,000.0

Keynote Speech

- *The 9th IEEE International Conference on Big Data Analytics (ICBDA)*, March 16-18, 2024, Waseda University, Tokyo, Japan.
- *The 7th IEEE International Conference on Data Science, in Cyberspace*, July 11-13, 2022, Guilin, China
- *IEEE DSC 2017 Workshop on Data Science and Web Analytics*, June 26, 2017, Shenzhen, China.
- Data Mining track of the *30th Florida Artificial Intelligence Research Society annual conference* (FLAIRS-30), May 16-18, 2016, Key Largo, Florida, USA

- *IEEE ICDM 2014 Workshop on Scalable Data Analytics: Theory and Applications*, Dec. 14-17, 2014, Shenzhen, China.
- *The First International Conference on Data Science*, May 27-28, 2014, Beijing, China.

Tutorial

- *The 2nd IEEE International Conference on Data Science in Cyberspace*, June 26-29, 2017, Shenzhen, China.
    - Title: Data Science in Online Digital Advertising

Conference Panellist

- Panel Member: 12th International Conference on Computational Data and Social Networks, *Large Language Models: Theory, Applications, and Challenges*. December 12, 2023
- Panel Member: 23rd IEEE International Conference on Data Mining (ICDM-2023), *On Computing Paradigms: Where will Large Language Models Be Going*, December 3, 2023
- Panel Member: *Engineering Research Center (ERC) Workshop on Building Smart Cities Ethically: Beyond Engineering for Engineers*, August 31, 2023
- Panel Member: *FAU Undergraduate Research Symposium: Harnessing the power of ChatGPT ethically: An interactive panel*, April 7, 2023.
- Panel Coordinator: 22nd IEEE International Conference on Data Mining (ICDM-2022), *Full Stack Artificial Intelligence: The missing pieces*, November 30, 2022.
- Panel Member: *Florida Atlantic University Instructional Faculty AI Academics & Integrity Summit*, Feb 6, 2022
- Panel Member: *Florida International University Critical Technology and Intelligence Summit*, Jack D. Gordon Institute for Public Policy, Florida International University, Miami, FL, September 17, 2019.

Best Paper Award

- T. Guo, X. Zhu, Y. Wang, F. Chen, Weak Supervision Network Embedding for Constrained Graph Learning, Proc. of the 25th Pacific Asian Conference on Knowledge Discovery and Data Mining (PAKDD-21), May 11-14, 2021, Delhi, India **(Best Paper Award)**
- M. Wu, S. Pan, and X. Zhu, OpenWGL: Open-World Graph Learning, Proc. of the 20th IEEE International Conference on Data Mining, Sorrento, Italy, Nov 17-23, 2020 **(Best Student Paper Award)**
- Z. Gharibshah and X. Zhu, TriNE: Network Representation Learning for Tripartite Heterogeneous Networks, Proc. Of the 11th IEEE International Conference on Knowledge Graph (ICKG-2020), August 9-11, 2020, Nanjing China **(Best Student Paper Award)**
- G. Rasario, T. Sonderman, and **X. Zhu**, Deep Transfer Learning for Traffic Sign Recognition, *IEEE International Conference on Information Reuse and Integration (IRI-2018)*, July 6-9, 2018, Salk Late City, USA **(Best Paper Award)**
- L. Chi, B. Li, and **X. Zhu**, Fast Graph Stream Classification Using Discriminative Clique Hashing, Proc. Of the 17th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-2013), April 14-17, Brisbane, Australia. **(Best Paper Award)**
- M. Fang and **X. Zhu**, I Don't Know the Label: Active Learning with Blind Knowledge, Proc. Of the 21st International Conference on Pattern Recognition (ICPR-12), November 11-15, 2012, Tsukuba, Japan. **(Best Student Paper Award)**
- Y. Zhang, **X. Zhu**, X. Wu, and J. P. Bond, ACE: An Aggressive Classifier Ensemble with Error Detection, Correction and Cleansing, *Proc. of the 17th IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, Hong Kong, November 14-16, 2005. (**Best Paper Award**)

IEEE Digital Library Most Popular Papers

- Xindong Wu, **Xingquan Zhu**, Gong-Qing Wu, Wei Ding: Data Mining with Big Data. *IEEE Transactions on Knowledge and Data Engineering*, 26(1): 97-107, 2014.
  Cited over 3,300 times, and TKDE most popular article (evidenced in the Scholarly citations)
- Daokun Zhang, Jie Yin, **Xingquan Zhu**, and Chengqi Zhang, Network Representation Learning: A Survey, IEEE Trans. On Big Data, 6(1):3-28, 2020.

IJCAI Most Influential Paper

- Shirui Pan, Jia Wu, **Xingquan Zhu**, Chengqi Zhang, Yang Wang, Tri-Party Deep Network Representation, *Proc. of the 25th International Joint Conference on Artificial Intelligence (IJCAI)*, July 9-16, 2016. New York, USA.

  https://www.paperdigest.org/2021/02/most-influential-ijcai-papers/

Award and Honors

- 2023 IEEE ICDM Outstanding Service Award (Award citation: https://icdm.zhonghuapu.com/Awards/23Service.shtml)
- Fellow of the Institute of Electrical and Electronics Engineers (IEEE), 2023
- Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA), 2023
- World's AI To Scientist, International Artificial Intelligence Industry Alliance (AIIA), 2023
- College of Engineering & Computer Science Distinguished Teacher of the Year (DTOY) Nominee, 2023
- Volunteer Award, IEEE Technical Community on Intelligent Informatics, 2022.
- College of Engineering & Computer Science Distinguished Teacher of the Year (DTOY) Nominee, 2022
- Outstanding Engineering Achievement Merit Award: The Engineers' Council, 2019
- Excellence in Research Award (Senior Faculty): College of Engineering and Computer Science, Florida Atlantic University, 2019
- Australian Research Council (ARC) Future Fellowship (Level 2), 2010

Grant Reviewers/Panel Members

- National Science Foundation Panelist (2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015)
- National Institute of Health (2009)
- Natural Sciences and Engineering Research Council, Canada (2015, 2009)
- Marsden Fund Council, Royal Society of New Zealand, New Zealand (2014)
- Australian Research Council, Australia (2017, 2016, 2015)
- National Intelligence and Security Discovery Research Grants Program (NISDRG), Australia (2020)
- National Science Foundations, China (2011, 2010, 2009, 2008)
- Croatian Science Foundation, Croatia (2019)
- Hong Kong Research Grants Council, Hong Kong (2022, 2018)

Research Work Featured by Press Release (Recent Years)

- National Science Foundation Research News: Saving an endangered species: New AI method counts manatee clusters in real time (January 2024)
  https://new.nsf.gov/news/saving-endangered-species-new-ai-method-counts
- FOX 35 News Orlando: Artificial intelligence used to count manatee clusters in real time: FAU researchers (January 2024)
  https://www.fox35orlando.com/news/artificial-intelligence-used-to-count-manatee-clusters-in-real-time-fau-researchers
- AI model proactively predicts if a COVID-19 test might be positive or not, Science Daily, Dec. 13, 2022
  https://www.sciencedaily.com/releases/2022/12/221213094833.htm
- How Data Analytics Are Used in Marketing, South China Morning Post, January 2022
  https://www.scmp.com/presented/business/topics/value-data/article/3161535/how-data-analytics-are-used-marketing

- Novel method predicts if COVID-19 clinical trials will fail or succeed, EurekAlert, July 2021 https://www.eurekalert.org/news-releases/590825
- Predictive Analytics Tools Forecast COVID-19 Surges Globally, Health IT Analytics, June 2020 https://healthitanalytics.com/news/predictive-analytics-tools-forecast-covid-19-surges-globally
- Machine Learning Powers COVID-19 Risk Assessment Dashboard, Health IT Analytics, 2020 https://healthitanalytics.com/news/machine-learning-powers-covid-19-risk-assessment-dashboard
- COVID-19 Knowledge Base and Risk Assessment Tool is Powered by AI, News Desk, Florida Atlantic University, June 2020. https://www.fau.edu/newsdesk/articles/covid-tool-ai.php
- Florida's First NSF-Funded AI and Deep Learning Laboratory, News Desk, Florida Atlantic University, Jan 10, 2019 https://www.fau.edu/newsdesk/articles/nsf-aidl-lab.php

Selected Professional Services

1. Associate Editor:
    a. IEEE Trans. on Knowledge and Data Engineering (2008-2012, 2014 – 2021).
    b. ACM Transactions on Knowledge Discovery from Data (2017– 2022).
    c. Journal of Big Data (Springer, 2013 – 2022)
    d. Journal of Social Network Analysis and Mining (Springer, 2010 – 2022)
    e. Network Modelling Analysis in Health Informatics and Bioinformatics (Springer, 2014-2022)
2. Guest Editor
    a. Neural Processing Letters, Special Issue on Transfer learning (Springer, 2022)
    b. Distributed and Parallel Databases, Special Issue on Scientific and Statistical Data Management in the Age of AI 2021 (Springer, 2022)
    c. Applied Intelligence, Special Issue on Multi-View Learning (Springer, 2021)
3. Conference General Co-Chair
    a. IEEE International Conference on Big Data (IEEE BigData), 2021
4. Conference Program Committee Co-Chair
    a. The 22nd IEEE International Conference on Data Mining (ICDM), 2022.
    b. The 33rd International Conference on Scientific and Statistical Database Management (SSDBM-2021), 2021
5. Conference Program Committee Vice Chairs, Area Chairs, or Senior PC
    a. ACM International Conference on Knowledge Discovery from Data (SIGKDD), 2023-2017
    b. IEEE International Conference on Data Mining (ICDM), 2021-2017
    c. ACM International Conference on Information and Knowledge Management (CIKM), 2022-2017
    d. AAAI International Conference on Artificial Intelligence (AAAI), 2024, 2022, 2019
6. Steering Committee
    a. International Conference on Scientific and Statistical Database Management (SSDBM), 2023

Course Offered (Since 2017):

Graduate level courses:

1. COT 6930: Advanced Data Science Capstone (2021 Spring)
2. CAP 6635: Artificial Intelligence (2024 Spring, 2023 Fall Professional Program, 2023 Spring, 2022 Spring, 2021 Fall)
3. CAP 6807: Computational Advertising and Real-time Data Analytics (2017 Fall)
4. CAP 6619: Deep Learning (2023 Fall, 2022 Fall, 2021 Fall, 2020 Fall, 2019 Fall, 2018 Fall)
5. CAP 6315: Social Networks and Big Data Analytics (2020 Spring, 2019 Spring, 2018 Spring, 2017 Spring)
6. CAP5615: Introduction to Neural Networks (2023 Summer, 2022 Summer, 2021 Summer, 2020 Summer, 2019 Summer, 2018 Summer, 2017 Summer)

Undergraduate level courses:

a. CAP 4770: Introduction to Data Mining & Machine Learning (2018 Spring)
b. CAP4630: Introduction to Artificial Intelligence (2022 Fall, 2021 Fall, 2020 Fall, 2019 Fall, 2018 Fall)
c. CDA 3201: Introduction to Logic Design (2017 Fall)

Teaching Evaluation Scores: Five-year average score: 1.588

Summarizes of the Student Perception of Teaching (SPOT) evaluation scores for my teaching (scale 1 to 5, with 1 being the best). The table columns describe the semester, the course title, course code, number of students enrolled, course credit hours, the student (Because of the change of the SPOT evaluation forms, for courses on and after 2015 Fall, the SPOT evaluation is based on the Item 6 question: "Rate your instructor's overall teaching effectiveness in this course". The scores of all questions are ranged from 1 to 5 (1 being the best). (Due to University SPOT system issues, 2021 Fall teaching evaluation results are not available, except the professional MS course, which is evaluated separately). The live and online sessions for CAP 6635 in 2023 Spring were evaluated separately in the University SPOT system. For all other courses, the evaluation was mixed in the system.

Average Teaching Evaluation Score of All Courses: 1.588

Semester	**Code & Course Title**	**Level**	**Num Enrolled**	**Cr**	**Evaluation** (SPOT item 6)
2023 Fall	CAP 6619 Deep Learning	Graduate (Live)	83	3	1.36
2023 Fall	CAP 6619 Deep Learning	Graduate (Online)	63	3	1.56
2023 Fall	CAP 6635 Artificial Intelligence	Graduate (Professional Program)	28	3	1.5
2023 Fall	CAP 6619 Deep Learning	Graduate	146	3	N/A
2023 Summer	CAP 5615: Into to Neural Network	Graduate	102	3	N/A
2023 Spring	CAP 6635: Artificial Intelligence	Graduate (Live)	99	3	1.24
2023 Spring	CAP 6635: Artificial Intelligence	Graduate (Online)	53	3	1.55
2022 Fall	CAP 6619: Deep Learning	Graduate	94	3	1.4
2022 Fall	CAP 4630: Intro to Artificial Intelligence	Undergraduate	90	3	1.49
2022 Summer	CAP 5615: Into to Neural Network	Graduate	80	3	1.48
2022 Spring	CAP 6635: Artificial Intelligence	Graduate	67	3	1.31
2021 Fall	CAP 6635: Artificial Intelligence	Graduate (Professional MS)	9	3	1.6
2021 Fall	CAP 6619: Deep Learning	Graduate	61	3	N/A
2021 Fall	CAP 4630: Into to Artificial Intelligence	Undergraduate	69	3	N/A
2021 Summer	CAP 5615: Into to Neural Network	Graduate	88	3	2.04
2021 Spring	COT 6930: Advanced Data Science Capstone	Graduate	9	3	N/A
2020 Fall	CAP 6619: Deep Learning	Graduate	75	3	1.51
2020 Fall	CAP 4630: Intro to Artificial Intelligence	Undergraduate	66	3	1.96
2020 Summer	CAP 5615: Intro to Neural Network	Undergraduate	65	3	2.38
2020 Spring	CAP 6315: Social Network & Big Data Analytics	Graduate	34	3	1.3
2019 Fall	CAP 6619: Deep Learning	Graduate	37	3	1.42

2019 Fall	CAP 4630: Intro to Artificial Intelligence	Undergraduate	60	3	1.56
2019 Summer	CAP 5615: Intro to Neural Network	Graduate	62	3	1.65
2019 Spring	CAP 6315: Social Network & Big Data Analytics	Graduate	36	3	1.6
2018 Fall	CAP 6619: Deep Learning	Graduate	51	3	1.75
2018 Fall	CAP 4630: Into to Artificial Intelligence	Undergraduate	75	3	1.7
2018 Summer	CAP 5615: Introduction to Neural Networks	Graduate	53	3	2.64
2018 Spring	CAP 6315: Social Networks & Big Data Analytics	CAP 6315	22	3	1.3
2018 Spring	CAP 4770: Into to Data Mining & Machine Learning	Undergraduate	15	3	1.44
2017 Fall	CAP 6807: Computational Advertising and Real-Time Data Analytics	Graduate	13	3	1.29
2017 Fall	CDA 3201: Introduction to Logic Design	Undergraduate	57	4	1.67
2017 Summer	CAP 5615: Introduction to Neural Networks	Graduate	36	3	1.6
2017 Spring	CAP 6315: Social Networks & Big Data Analytics	Graduate	27	3	1.17

Selected Publications （Over 130 journal articles and 170 conference proceeding papers）

Selected Books/Proceedings (Since 2017):

- **Xingquan Zhu**, Sanjay Ranka, My T. Thai, Takashi Washio, Xindong Wu, *IEEE Intl. Conference on Data Mining, ICDM 2022*, Orlando, FL, USA, November 28 - Dec. 1, 2022. IEEE 2022, ISBN 978-1-6654-5099-7
- Yixin Chen, Heiko Ludwig, Yicheng Tu, Usama M. Fayyad, **Xingquan Zhu**, Xiaohua Hu, et al. *2021 IEEE International Conference on Big Data (Big Data)*, Orlando, FL, USA, December 15-18, 2021. IEEE 2021, ISBN 978-1-6654-3902-2
- Qiang Zhu, **Xingquan Zhu**, Yicheng Tu, Zichen Xu, Anand Kumar, *SSDBM 2021: 33rd International Conference on Scientific and Statistical Database Management*, Tampa, FL, USA, July 6-7, 2021. ACM 2021, ISBN 978-1-4503-8413-1
- **Xingquan Zhu**, Haicheng Tao, Zhiang Wu, Jie Cao, Kristopher Kalish, Jeremy Kayne: *Fraud Prevention in Online Digital Advertising*. Springer Briefs in Computer Science, Springer 2017, ISBN 978-3-319-56792-1.

Selected Conference Publications (Since 2017):

1. Yufei Jin, Richard Gao, Yi He, and **Xingquan Zhu**, GLDL: Graph Label Distribution Learning, *The 38th Annual AAAI Conference on Artificial Intelligence (AAAI)*, Vancouver, Canada, Feb. 20-27, 2024,
2. Xin Zheng, Miao Zhang, Chunyang Chen, Quoc V. Hung Nguyen, **Xingquan Zhu**, Shirui Pan, Structure-free Graph Condensation. *Thirty-seventh Conference on Advances in Neural Information Processing Systems (NeurIPS)*, New Orleans, USA, Dec. 10-16, 2023.
3. Boyu Li, Ting Guo, **Xingquan Zhu**, Yang Wang, Fang Chen, ConGCN: Factorized Graph Convolutional Networks for Consensus Recommendation. *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD)*, pp.369-386, Turin, Italy. Sept. 18-22, 2023.

4. Boyu Li, Ting Guo, **Xingquan Zhu**, Qian Li, Yang Wang, Fang Chen, SGCCL: Siamese Graph Contrastive Consensus Learning for Personalized Recommendation. *Proceedings of the Sixteenth ACM International Conference on Web Search and Data Mining (WSDM)*, Singapore, Feb 27- March3, 2023.
5. Xindong Wu, **Xingquan Zhu**, Elena Baralis, Ruqian Lu, Vipin Kumar, Leszek Rutkowski, Jie Tang, On Computing Paradigm – Where Will Large Language Models Be Going, *Proc. of the 23rd IEEE International Conference on Data Mining (ICDM)*, Dec. 1-4, 2023.
6. Zhabiz Gharibshah, **Xingquan Zhu**, Local Contrastive Feature Learning for Tabular Data. *31st ACM International Conference on Information & Knowledge Management (CIKM)*, Atlanta, GA, USA, October 17-21, 2022.
7. Man Wu, **Xingquan Zhu**, Temporal Adaptive Aggregation Network for Dynamic Graph Learning. *IEEE International Conference on Big Data*, pp.806-811, Osaka, Japan, Dec. 17-20, 2022.
8. Yufei Jin, Xingquan Zhu, Predictive Masking for Semi-Supervised Graph Contrastive Learning. *IEEE International Conference on Big Data*, pp.1266-1271, Osaka, Japan, Dec. 17-20, 2022.
9. Cihan Ulus, Zhiqiang Wang, Sheikh M. A. Iqbal, K. Md. Salman Khan, **Xingquan Zhu**, Transfer Naïve Bayes Learning using Augmentation and Stacking for SMS Spam Detection. *IEEE International Conference on Knowledge Graph (ICKG)*, pp.275-282, Orlando, FL, USA, November 30 - Dec. 1, 2022.
10. Ting Guo, **Xingquan Zhu**, Yang Wang, and Fang Chen, Weak Supervision Network Embedding for Constrained Graph Learning, *Proc. of the 25th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, Delhi, India, May 11-14, 2021.
11. Min Shi, Yufei Tang, **Xingquan Zhu**, David A. Wilson, Jianxun Liu, *Multi-Class Imbalanced Graph Convolutional Network Learning*. *Proc. of the 29th International Joint Conference on Artificial Intelligence (IJCAI),* pp.2879-2885, Jan 7-15, 2021.
12. Ting Guo, **Xingquan Zhu**, Yang Wang, Fang Chen, Graph Compression Networks. *IEEE International Conference on Big Data, pp.1030-1036, Orlando, FL, USA, December 15-18, 2021*
13. Yu Huang, Chao Zhang, Jaswanth K. Yella, Sergei Petrov, Xiaoye Qian, Yufei Tang, **Xingquan Zhu**, Sthitie Bom, *IEEE International Conference on Big Data*, pp.746-756, Orlando, FL, USA, December 15-18, 2021.
14. Man Wu, Shirui Pan, and Xingquan Zhu, OpenWGL: Open-World Graph Learning, *Proc. of the 20th IEEE International Conference on Data Mining (ICDM)*, Sorrento, Italy, Nov 17-23, 2020 **(Best Student Paper Award)**
15. Zhabiz Gharibshah and Xingquan Zhu, TriNE: Network Representation Learning for Tripartite Heterogeneous Networks, *Proc. Of the 11th IEEE International Conference on Knowledge Graph* (ICKG), pp.497-504. August 9-11, 2020, Nanjing China **(Best Student Paper Award)**
16. Anak Wannaphaschaiyong and **Xingquan Zhu**, COPD Disease Classification using Network Embedding with Synthetic Relationships, Proc. of the The 33rd Florida Artificial Intelligence Research Society International Conference (FLAIRS), North Miami Beach, Florida, May 17-20, 2020.
17. Yuping Su, **Xingquan Zhu**, Bei Dong, Yumei Zhang, and Xiaojun Wu, MedFroDetect: Medicare Fraud Detection with Extremely Imbalanced Class Distributions, Proc. of the The 33rd Florida Artificial Intelligence Research Society International Conference (FLAIRS), North Miami Beach, Florida, May 17-20, 2020.
18. Shuwen Wang, Magdalyn E. Elkin, and **Xingquan Zhu**, Imbalanced Learning for Hospital Readmission Prediction using National Readmission Database, *Proc. Of the 11th IEEE International Conference on Knowledge Graph* (ICKG), pp. 116-122, August 9-11, 2020, Nanjing China.
19. Lukasz Chmielewski, Rafina Amin, Anak Wannaphaschaiyong, **Xingquan Zhu**, Network Analysis of Technology Stocks using Market Correlation, *Proc. Of the 11th IEEE International Conference on Knowledge Graph* (ICKG), pp. 267-274, August 9-11, 2020, Nanjing China.
20. Man Wu, Shirui Pan, Chuan Zhou, Xiaojun Chang, and **Xingquan Zhu**, Unsupervised Domain Adaptive Graph Convolutional Networks, In Proc. Of the International World Wide Web Conference (WWW), Taipei, April 20-24, 2020.

21. Man Wu, Shirui Pan, Lan Du, Ivor Tsang, **Xingquan Zhu**, Bo Du, Long-short Distance Aggregation Networks for Positive Unlabeled Graph Learning, In Proc. of the 28th ACM International Conference on Information and Knowledge Management (CIKM-2019), Beijing, China, Nov 3-7, 2019.
22. Man Wu, Shirui Pan, **Xingquan Zhu**, Chuan Zhou, Lei Pan, Domain-Adversarial Graph Neural Networks for Text Classification, In Proc. of the 19th IEEE International Conference on Data Mining (ICDM-2019), Beijing, China, Nov 8-11, 2019.
23. Shichao Zhu, Chuan Zhou, Shirui Pan, **Xingquan Zhu**, and Bin Wang, Relation Structure-Aware Heterogeneous Graph Neural Network, In Proc. of the 19th IEEE International Conference on Data Mining (ICDM-2019), Beijing, China, Nov 8-11, 2019
24. Magdalyn Elkin, Whitney A.J. Andrews, **Xingquan Zhu**. Network Analysis and Recommendation for Infectious Disease Clinical Trial Research. In Proc. of the 10th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (BCB-2019), Niagara Falls, New York, September 7-10, 2019
25. Ting Guo, **Xingquan Zhu**, Yang Wang, and Fang Chen, Discriminative Sample Generation for Deep Imbalanced Learning. *In Proc. Of the 28th International Joint Conference on Artificial Intelligence (IJCAI)*, August 10-16, 2019, Macau, China.
26. Zhabiz Gharibshah, **Xingquan Zhu**, Arthur Hainline, and Michael Conway, Deep Learning for Online Display Advertising User Clicks and Interests Prediction. *In Proc. of the Asian Pacific Web and Web-Age Information Management Joint Conference (WPWeb-WAIM)*, August 1-3, 2019.
27. Huimei Han, **Xingquan Zhu**, Ying Li, EDLT: Enabling Deep Learning for Generic Data Classification. *In Proc. of the 18th IEEE International Conference on Data Mining (ICDM)*, pp. 147-156, November 17-20, Singapore, 2018.
28. Daokun Zhang, Jie Yin, **Xingquan Zhu**, Chengqi Zhang, SINE: Scalable Incomplete Network Embedding. *In Proc. of the 18th IEEE International Conference on Data Mining (ICDM)*, pp.737-746, November 17-20, Singapore, 2018.
29. Haibo Wang, Chuan Zhou, Jia Wu, Weizhen Dang, **Xingquan Zhu**, Jilong Wang, Deep Structure Learning for Fraud Detection. *In Proc. of the 18th IEEE International Conference on Data Mining (ICDM)*, pp.567-576, November 17-20, Singapore, 2018.
30. Eric Golinko, Thomas Sonderman, **Xingquan Zhu**, Learning Convolutional Neural Networks from Ordered Features of Generic Data. *IEEE International Conf. on Machine Learning and Applications (ICMLA)*, pp.897-900, 2018.
31. Grant Rosario, Thomas Sonderman, **Xingquan Zhu**, Deep Transfer Learning for Traffic Sign Recognition. *IEEE International Conf. on Information Reuse and Integration (IRI)*, pp.178-185, 2018. **(Best Paper Award)**.
32. Charles Wheelus, Elias Bou-Harb, **Xingquan Zhu**, Tackling Class Imbalance in Cyber Security Datasets. *IEEE International Conf. on Information Reuse and Integration (IRI)*, pp.229-232, 2018.
33. Daokun Zhang, Jie Yin, **Xingquan Zhu**, Chengqi Zhang, MetaGraph2Vec: Complex Semantic Path Augmented Heterogeneous Network Embedding. *Pacific Asia International Conf. on Knowledge Discovery and Data Mining (PAKDD)*, pp.196-208, 2018.
34. **Xingquan Zhu**, Jose Hurtado, Haicheng Tao, Localized sampling for hospital re-admission prediction with imbalanced sample distributions. pp. 4571-4578, *International Joint Conference on Neural Networks (IJCNN)*, Anchorage, Alaska, USA, May 14-19, 2017.
35. Eric Golinko and **Xingquan Zhu**, GFEL: Generalized Feature Embedding Learning Using Weighted Instance Matching, *IEEE International Conference on Information Reuse and Integration (IRI)*, San Diego, USA, Aug. 4-6, 2017.
36. Hui Liu, **Xingquan Zhu**, Kristopher Kalish, and Jeremy Kayne, ULTR-CTR: Fast Page Grouping using URL Truncation for Real-time Click Through Rate Estimation, *IEEE International Conference on Information Reuse and Integration (IRI)*, San Diego, USA, Aug. 4-6, 2017.
37. Daokun Zhang, Jie Yin, **Xingquan Zhu**, and Chengqi Zhang, User Profile Preserving Social Network

Embedding, *International Joint Conference on Artificial Intelligence (IJCAI)*, Melbourne, Australia, August 19-25, 2017.

38. Chun Wang, Shirui Pan, **Xingquan Zhu**, Guodong Long, and Jing Jiang, MGAE: Marginalized Graph Autoencoder for Graph Clustering, *ACM International Conference on Information and Knowledge Management (CIKM)*, Nov. 6-10, 2017.
39. Bozhong Liu, Ling Chen, **Xingquan Zhu**, Ying Zhang, Chengqi Zhang, Weidong Qiu, Protecting Location Privacy in Spatial Crowdsourcing using Encrypted Data. *pp*.478-481, *20th International Conference on Extending Database Technology (EDBT)*, Venice, Italy, March 21-24, 2017
40. Christopher Baechle, Ankur Agarwal, Ravi S. Behara, **Xingquan Zhu**, Latent topic ensemble learning for hospital readmission cost reduction. *pp*.4594-4601, *International Joint Conference on Neural Networks (IJCNN)*, Anchorage, Alaska, USA, May 14-19, 2017.
41. Christopher Baechle, Ankur Agarwal, Ravi S. Behara, **Xingquan Zhu**, Co-occurring evidence discovery for COPD patients using natural language processing. *pp*.321-324, *IEEE EMBS International Conference on Biomedical & Health Informatics (BHI)*, Orland, FL, USA, February 16-19, 2017.
42. Christopher Baechle, Ankur Agarwal, Ravi S. Behara, **Xingquan Zhu**, A cost sensitive approach to predicting 30-day hospital readmission in COPD patients. *pp*.317-320, *IEEE EMBS International Conference on Biomedical & Health Informatics (BHI)*, Orland, FL, USA, February 16-19, 2017.

Selected Journal Articles (Since 2017):

1. Youxi Wu, Qian Hu, Yan Li, Lei Guo, **Xingquan Zhu**, Xindong Wu, OPP-Miner: Order-Preserving Sequential Pattern Mining for Time Series. *IEEE Transactions on Cybernetics*, 53(5): 3288-3300, 2023.
2. Divya Gangwani, **Xingquan Zhu**, Borko Furht, Exploring Investor-business-market Interplay for Business Success Prediction. *Journal of Big Data*, 10(1): 48, 2023.
3. Mostapha Alsaidi, Muhammad Tanveer Jan, Ahmed Altaher, Hanqi Zhuang, **Xingquan Zhu**, Tackling the Class Imbalanced Dermoscopic Image Classification Using Data Augmentation and GAN. *Multimedia Tools and Applications*, 2023.
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2019 - 2022 Assistant Professor, Florida Atlantic University, Boca Raton, Florida, United States

2015 - 2019 Assistant Professor, South Dakota State University, Brookings, South Dakota, United States

Products

Products Most Closely Related to the Proposed Project

1. Lin Y, Ni Z. A Robust Multi-Virtual-Agent Inverse Reinforcement Learning Approach With Data Aggregation for Perturbed Environments. IEEE Trans Neural Netw Learn Syst. 2025 Aug;36(8):15515-15527. PubMed PMID: 40117149.
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Other Significant Products, Whether or Not Related to the Proposed Project

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Certification:

I certify that the information provided is current, accurate, and complete. This includes but is not limited to information related to domestic and foreign appointments and positions.

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