Announces the Ph.D. Dissertation Defense of

Adam Corbin

for the degree of Doctor of Philosophy (Ph.D.)

“Investigating and Improving Fairness and Bias in Machine Learning Models for Dermatology”

March 27, 2023, 9:00 a.m
Virtual defense
Zoom: https://fau-edu.zoom.us/j/7041237256?pwd=b2lmbThoZU84ZFdDWHc3QIvqWjFOQT09

DEPARTMENT:
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ABSTRACT OF DISSERTATION
Advancements in Artificial Intelligence (AI) and Machine Learning (ML) have significantly improved their application in dermatology. However, bias issues in AI systems can result in missed diagnoses and disparities in healthcare, especially for individuals with different skin types. This dissertation aims to investigate and improve the fairness and bias in machine learning models for dermatology by evaluating and enhancing their performance across different Fitzpatrick skin types.

The technical contributions of the dissertation include generating metadata for Fitzpatrick Skin Type using Individual Typology Angle; outlining best practices for Explainable AI (XAI) and the use of colormaps; developing and enhancing ML models through skin color transformation and extending the models to include XAI methods for better interpretation and improvement of fairness and bias; and providing a list of steps for successful application of deep learning in medical image analysis.

The research findings of this dissertation have the potential to contribute to the development of fair and unbiased AI/ML models in dermatology. This can ultimately lead to better health outcomes and reduced healthcare costs, particularly for individuals with different skin types.

BIOGRAPHICAL SKETCH
Born in Clearwater, Florida

B.S., Florida Atlantic University, Boca Raton, Florida, 2011
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CONCERNING PERIOD OF PREPARATION
QUALIFYING EXAMINATION

Time in Preparation: 2019-2023

Qualifying Examination Passed: Fall 2020

Published Papers:


