Bing Ouyang

Professional Preparation

Xi'an Jiaotong Univ.	Xi'an, China	B.S.	Electronic & Communication Systems	1989
University of Miami	Miami, FL	M.S.	Applied Marine Physics	1995
University of Florida	Gainesville, FL	M.S.	Computer Engineering	1996
Southern Methodist Univ.	Dallas, TX	Ph.D.	Electrical Engineering	2007

Appointments

2009-Present, Research Associate, Harbor Branch at Florida Atlantic University

2002-2009 Algorithm Engineer, DLP Division, Texas Instruments Inc.

1996-2002 Software System Engineer, KFAB, Texas Instruments Inc.

Dr. Ouyang joined HBOI/FAU as a Research Associate in 2009. He is one of the 40 recipients of prestigious 2013 Air Force Young Investigator Research Award. He has been PI and co-PI on several other grants and projects. His main research interests include novel compact underwater serial imaging system; underwater imaging lidar noise reduction and image enhancement and computer vision for underwater imaging systems. His 2011 SPIE paper was first reported application of compressive sensing in underwater laser imaging systems. He has a provisional patent application "MEMS Microdisplay Optical Imaging and Sensor System in Scattering Underwater Environment" filed jointly with Dr. Fraser Dalgleish and Dr. Anni Vuorenkoski. He is also applying for a patent on Compressive Sensing based imaging Lidar. Prior to joining HBOI, Dr. Ouyang was with Texas Instruments (TI) between 1996 and 2009. In 2002, he joined TI's Digital Light Processing (DLP) group as an ASIC algorithm engineer, developing front end algorithm form DLP video processor. He was peer-elected to TI's Member Group of Technical Staff. He has three patents on video source detection and semiconductor equipment data acquisition system (US Patent 7,825,990, 7,733,424 and 8,112,400) and four pending applications.

Grants and Projects

- AFOSR (2013 Air Force Young Investigator Research Award: Airborne Compressive Sensing Topographic Lidar), $360,000, PI: Ouyang. 1/1/2013 – 12/31/2015.
- ONR (Feasibility Study of Compressive Sensing Underwater Imaging Lidar), $103,000, PI: Ouyang, Co-PIs: Dalgleish, Vuorenkoski. 7/1/2012 – 6/30/2013.
- ONR (Underwater Laser Imaging and Communications Research – Phase II), $2,002,000, PI: Dalgleish, Co-PI: Ouyang, Vuorenkoski. 7/1/2010 - 1/31/2013
- Bluefin Robotics, "Bluefin Glider Research & Operations Center", $150,000, PI: Dalgleish, Co-PIs: Ouyang, Vuorenkoski - 04/25/2011 – 04/24/2012.
- BP and Liquid Robotics, "Liquid Robotics, GoM long term water quality monitoring research program", $134,448, PI: Dalgleish, Co-PI: Ouyang, Vuorenkoski. 06/01/2011 – 05/31/2012.

Publications:

Patents

- Ouyang, B., "System and method for determining high frequency content in an analog image source", 8,260,047 09/04/2012.
- Ouyang B., Baweja, S. G., Rigsby D. J, "Method for collecting data from semiconductor equipment", US Patent 8,112,400, 02/07/2012.
- Ouyang B., Hayden J. M., Ethridge T. L., Sundararajan A., Dickinson, L. D., "Method and apparatus for analog graphics sample clock frequency offset detection and verification", US Patent 8,111,330, 02/07/2012.
- Hayden J. M., Ouyang B., Ethridge T. L., Sundararajan A., Dickinson, L. D., "Method and apparatus for analog graphics sample clock frequency verification", US Patent 7,733,424, 06/08/2010.

Book Chapters

- Kovacs, D.M. and Ouyang, B., "Underwater Imaging: Photographic, Digital and Video Techniques" in Watson J. and Zielinski, O. eds "Subsea Optics and Imaging", Woodhead Publishing Limited, *to be published in 2013.*

Journal Papers

- Ouyang B., Dalgleish F. R., Caimi F. M., Giddings T. E., Shirron J. J., Vuorenkoski A. K., Britton W., "Compressive Sensing Underwater Laser Serial Imaging System", SPIE Journal of Electronic Imaging, special edition on Compressive Sensing (Accepted).
- Ouyang B., Dalgleish F. R., Vuorenkoski A., Britton W., Ramos B. and Metzger B., "Visualization for multi-static underwater LLS system using Image based Rendering", IEEE Journal of Oceanic Engineering, (Accepted).
- Dalgleish, F. R. Vuorenkoski, A. K. Ouyang , B. Caimi, F. M. Mazel, C. H. Shirron J. J and Giddings, T.E. "Experimental validation of channel impulse response radiative transfer model for distributed configurations of undersea serial imaging lidar", *In Preparation for Applied Optics, 2012.*
- Dalgleish, F. R. Nootz, G. A. Hou, W. Vuorenkoski, A. K., Ouyang, B. and Rhodes, W. T. **"**Experimental assessment of laser line scan underwater image blurring due to mixing layer turbulence", *In preparation for Applied Optics, 2012.*

Conference Papers

- Ouyang B., Dalgleish F. R., Negahdaripour, S., Vuorenkoski A. K., Britton W. and Wang, Y.X., "Experimental Study of Underwater Stereo via Pattern Projection", IEEE/MTS Oceans'12.
- Dalgleish F. R., Ouyang B., , Vuorenkoski A. K., Metzger B., Ramos B. , and Britton W., "Extended range distributed laser serial imaging in turbid estuarine and coastal conditions", IEEE/MTS Oceans'12
- Ouyang B., Dalgleish F. R., Caimi F. M., Giddings T. E., Shirron J. J., Vuorenkoski A. K., "Image enhancement for underwater pulsed laser line scan imaging system", Proc. SPIE 8372, 2012.
- Ouyang B., Dalgleish F. R., Caimi F. M., Giddings T. E., Shirron J. J., Vuorenkoski A. K., Nootz G., Britton W. and Ramos B., "Underwater laser serial imaging using Compressive Sensing and Digital Mirror Device", Proc., SPIE 8037, 2011.
- Dalgleish, F.R., Vuorenkoski, A.K, Nootz, G., Ouyang, B. and Caimi, F.M., "Environmental Performance Bounds for Undersea Pulsed Laser Serial Imagers", Submitted to Journal for Underwater Acoustics (USN), Special Edition on Electro-Optics, 2011.
- Dalgleish, F. R., Vuorenkoski, A. K., Nootz, G., Ouyang, B., Caimi, F. M. "Experimental imaging performance evaluation for alternate configurations of undersea pulsed laser serial imagers", Proc., SPIE 8030, 2011.
- Ouyang B., Dalgleish F. R., "Underwater laser serial imaging using Compressive Sensing", Proc. Ocean Optics XX, September 27 – October 1 2010.
- Ouyang B., Dalgleish F. R., Vuorenkoski A., Britton W., Ramos B. and Metzger B., "Visualization for multi-static underwater LLS system using Image Based Rendering", IEEE/MTS Ocean'10, 2010.
- Ouyang B., "Watermarking based on unified pattern recognition framework", Ph.D Dissertation, Dec. 2007.
- Ouyang B. and Srinath M. D., "Robust image watermarking based on affine invariant point detection and Zernike moments", 2007 IEEE BMSB'07, 2007.

Patent Applications

- Provisional Patent Application US 61/325,449: MEMS Microdisplay Optical Imaging and Sensor Systems for Underwater Scattering Environments
- US Patent Application 20090316987: System and Apparatus to Determine High Frequency Content for Analog Graphic Source
- US Patent Application 20090256829: System and Method for Detecting a Sampling Frequency of an Analog Video Signal
- US Patent Application 20100007795: System and Method for Clock Offset Detection
- US Patent Application 20100008575: System and Method for Tuning a Sampling Frequency

Synergistic Activities

- Underwater Imaging and Vision session co-chair, Ocean's 12.
- Invited Speaker at Satellite Earth Workshop PABU, Nov, 2012.

Collaborators and Other Affiliations

Collaborators and co-authors

Jose Principe (UF), Frank Caimi (Sky Cross), Gary Key (Frontier Technology), Tom Giddings, Joseph Shirron (Metron Inc.), Graham Hine (Liquid Robotics), Pierre-Philippe Beaujean (FAU), Joshua Elvander (Bluefin Robotics), Donna Kovacs (Harris), Bob Bridges (InView), Shahriar Negahdaripour (Miami).

Thesis Advisor and Postgraduate-Scholar Sponsor

Walter Britton, Florida Atlantic University, Ph.D Research Committee.