

Qualifications

Excellent presentation, interpersonal, and mentoring skills. Significant experience with sonar Technology Readiness Assessment of critical technology elements for US Department of Defense acquisition programs. Extensive signal and image processing background using both linear and nonlinear transform analysis as well as statistical modeling. Proficiency in MATLAB® and C++ programming languages. Experience with PIC (Microchip) microprocessors and single-board computers (Raspberry Pi®, Beaglebone®, etc.). Ability to design and prototype microprocessor-based analog and digital circuits/systems. In depth knowledge of C++ and MATLAB® based Graphic User Interface (GUI) construction. Exceptional laboratory skills that include microsurgery, small tool precision, small signal acquisition, and noise reduction. Experience teaching at the university level. Significant outreach and volunteering background.

Member of the Technology Transition Working Group (TTWG) for PMS-408 charged with evaluating Technological Maturity of sensors within the larger MK18 Family of Systems. These include, but are not limited to, the Small Synthetic Aperture Minehunter (SSAM), versions 2 and 3, the Autonomous Topographic Large Area Survey (ATLAS) sonar systems, including the integrated Precision Underwater MAPPING forward looking sonar (iPUMA-FLS), and the Light-weight Conformal Synthetic Aperture Sonar (LC-SAS). Continue to provide support for all sidescan sonar applications utilized by the Autonomous and Defensive Systems department, NUWCDIVNPT.

Currently in year four, of a four-year In-house Laboratory Independent Research (ILIR) which seeks to develop Novel Reconfigurable Neuromorphic Computing Methods for biologically realistic neural network information processing. The Office of Naval Research sponsored Major Force Program Category 6, Budget Activity 1 (6.1), basic research development funding, includes significant collaboration with researchers at Brown University, the University of Rhode Island, and Baylor University.

Education

- 2006–2008 **PhD, Electrical Engineering**, *The University of Rhode Island*.
- 2005–2006 **Masters of Science, Electrical Engineering**, *The University of Rhode Island*.
- 2001–2005 **Bachelors of Science, Electrical Engineering**, *The University of Rhode Island*, GPA – 3.81, Summa Cum Laude.
- 2001–2004 **Bachelors of Science, Biomedical Engineering**, *The University of Rhode Island*, GPA – 3.84, Summa Cum Laude.

PhD Thesis

Title *A sequential algorithm for biological event detection using statistical nonstationarity*

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Security Clearance

- 2010–Present Top Secret, Single Scope Background Investigation
2007–2010 Secret, National Agency Check with Local Agency Check and Credit Check

Experience

Vocational

- 2007–Present **Research Engineer**, NAVAL UNDERSEA WARFARE CENTER, Newport, RI.
Research, design, and prototype image and signal processing algorithms for use in non-traditional navigation. Provide support for algorithm development and MATLAB® coding for novel uses for synthetic aperture sidescan sonar data and imagery as well as non-traditional sensing techniques.
Detailed achievements:
- Support Technology Readiness Assessments, including Technology Readiness Level determination, for PMS-408, MK18 Family of Systems
 - Received and executed over \$500,000 in internal investments:
 - In-house Laboratory Independent Research
 - Novel Reconfigurable Neuromorphic Computing
 - New Professional Development
 - Support outreach efforts by running microprocessor-based summer programs
- 2005–Present **Adjunct Assistant Professor**, THE UNIVERSITY OF RHODE ISLAND, Kingston, RI.
Teach, develop and oversee individual projects in the following courses:
Biomedical Instrumentation and Biomeasurement, Biomedical Imaging and Image Processing, Neuroengineering.
Prepare Accreditation Board for Engineering and Technology (ABET) reports as necessary during accreditation years.

Miscellaneous

- 1995–2007 **Wine Broker**, *Various*, Wilmington, Baltimore, Boston.
Worked for several wine portfolios along the east coast of the United States as a purchaser and sales agent.

Awards and Patents

- 2012 University of Rhode Island Excellence in Intellectual Property Award for "Processor Controlled Voltage-Current Analysis of Nerve and Muscle Tissues"
2012 A Fully Automated Outlier Rejection Algorithm for Bathymetric Sonar Processing, US Patent 8,605,549
2011 Naval Sea Systems Command (NAVSEA) Achievement Award for Excellence in Technology Demonstration for fiscal year (FY) 2010
2011 Processor Controlled Voltage-Current Analysis of Nerve and Muscle Tissues, Sun, et al. US Patent 8,000,783
2009 NAVSEA/Department of Navy (DON) Commendation for Educational Outreach Efforts
2006 National Science Foundation Graduate Research Fellowship Honorable Mention

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Research Funding

- 2016 \$100k In-house Laboratory Independent Research (ILIR) - Neuromorphic Reconfigurable Computing
- 2015 \$100k ILIR - Neuromorphic Reconfigurable Computing
- 2014 \$100k ILIR - Neuromorphic Reconfigurable Computing
- 2013 \$100k ILIR - Neuromorphic Reconfigurable Computing
- 2013 \$84k Marine Corps Systems Command, External Funding to provide Subject Matter Expert review of hand-held sonar device.
- 2012 \$100k Naval Undersea Warfare Center (NUWC)-managed external funding from the National Defense Education Program to develop a small profile underwater sensor package
- 2011 \$95k NUWC Internal Investment Section 219 Funding to examine Broadband Sonar Applications using Laser Vibrometry
- 2010 \$50k NUWC Internal Investment Section 219 Funding to examine Bat Echolocation
- 2009 \$50k NUWC Internal Investment New Professional Development Funding to examine Bathymetric Sonar Processing

Computer skills

- Basic JAVA, PERL, RUBY
- Intermediate Linux, PYTHON, Single Board Computers (Raspberry Pi®, Beaglebone®, NTC C.H.I.P)
- Advanced L^AT_EX, C++, MATLAB®, PIC Microprocessors, Atmel/Arduino, wxWidgets (GUI Library) Toolkit

Representative Publications

- DiCecco, J, Gaudette, J and Simmons, J. Multi-component separation and analysis of bat echolocation calls. *Journal of the Acoustical Society of America*, Vol. 133, Issue 1, Jan 1013, pp 538-546.
- DiCecco, J and Gaudette, J. Analysis of Active Sonar Waveform Design by Echolocating Mammals. NATO Undersea Research Center (NUWC) Maritime Rapid Environmental Assessment (MREA10) Conference, Lerici, Italy, October 18-22, 2010.
- DiCecco, J. Leg-to-Leg Bathymetric Contour Alignment Using the Line Segment Hausdorff Distance and the 2-D Savitzky-Golay Filter. (Accepted, *Journal of Field Robotics*, August 2011)
- DiCecco, J. Practical Considerations in Gridding Bathymetric Data for Map-Matching with Applications to Non-Traditional Navigation. (Accepted, *Journal of Field Robotics*, June 2010)
- DiCecco, J. and Jackson, L. B. A Quantitative Analysis of the Effect of Block and Pad Size On Perfect-Reconstruction Noncausal IIR Filter Banks. (Unpublished, pending revision)

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