

Education:

B.S. Mechanical Engineering (with Distinction), Worcester Polytechnic Institute, May 1986

M.S. Ocean Engineering, University of Rhode Island, May 1994, (Thesis: *Design and Construction of a Computer Controlled Underwater Acoustic Transducer Calibration Facility*)

Ph.D. Ocean Engineering, University of Rhode Island, May 2001, (Dissertation: *Models, Algorithms, and Measurements for Underwater Acoustic Positioning*)

Professional Experience:**2001 – Present**

Research Associate Professor, Department of Ocean Engineering

Associate Director for Education, Center of Excellence in Undersea Technology

University Of Rhode Island

Appointed Adjunct Assistant Professor in 2001, Adjunct Associate Professor in 2004, and Research Associate Professor in 2008. Duties include research, advising, instruction and outreach.

Extensive funded research projects encompassing underwater acoustics, signal processing, communications, ocean instrumentation, and renewable energy. Advisor for Masters and Ph.D. students in the completion of thesis and dissertation research. Conduct significant and frequent experimentation using ships, boats and shore-based laboratories including test planning, cruise design, integration of navigation, mapping and sonar systems, wave spectra, computer data acquisition, and signal processing.

Broad graduate and undergraduate teaching experience for courses in Ocean Systems Engineering, Underwater Acoustics, Navigation, Ocean Instrumentation, Ocean Measurements, Signal Processing and Marine Hydrodynamics. Taught numerous special problems courses and developed new curricula.

Collaborated in the creation of a Center of Excellence in Undersea Technology (COEUT) at the University of Rhode Island, and the award of a Cooperative Agreement with Naval Undersea Warfare Center for a COEUT in 2007. The mission of the COEUT is to:

- ▷ Perform basic and applied research focused on the design, development, testing, and implementation of a wide variety of undersea technologies that support both military and civilian applications.
- ▷ Provide research opportunities and training in support of graduate and undergraduate education for the next generation of ocean technologists.

Increased the College of Engineering graduate enrollment by establishing a Master of Science degree program for the Naval Undersea Warfare Center focused on systems engineering and structured within the existing degree programs of the college.

1986 – Present

Engineering Duty Officer, United States Navy

From 1986 to 1991 served on active duty as a nuclear trained submarine officer. From 1992 to Present served in Selected Reserves. Currently hold the rank of Commander and assigned to the Office of Naval Research, Arlington, VA.

On active duty qualified in Submarines and Nuclear Reactor operations. Held various Division Officer billets including SONAR, Electrical, Interior Communication, Auxiliary, Ships Diving Officer, and Damage Control Assistant. Qualified as a Navy SCUBA, Deep Sea, and Salvage Diving Officer. Qualified as Engineering Duty Officer. Previous assignments included Mobile Diving & Salvage Unit TWO Detachment 201 and Supervisor of Salvage and Diving, Director of Ocean Engineering, Naval Sea Systems Command.

2008 – Present**Owner & President, DBV Technology, LLC**

DBV Technology, LLC is a small business formed to conduct research and development of ocean instruments for commercial, academic, and military applications – primarily under the SBIR program. Completed Phase I activity on topic N08-199 for the U.S. Navy Strategic Systems Program to develop a seafloor system to detect and localize objects impacting the sea surface. Phase II is pending and will be conducted in collaboration with the University of Rhode Island.

2003 – 2007**Chief Scientist and Principal, Mikel, Inc., Fall River, MA**

Chief Scientist and principal of start-up technology based small business engaged in applied research for Department of Defense. Principal investigator of Small Business Innovation Research (SBIR) project for the U.S. Navy to develop an advanced Active Intercept Ranging SONAR system for installation on all submarines in the US fleet. Successfully transitioned from Phase II to Phase III with a \$40M contract award and \$4.2M in initial funding. Less than 5% of SBIR projects transition from Phase II to Phase III. Mikel, Inc. is an advanced engineering company primarily focused on providing the U.S. Navy with affordable real time technological solutions to complex USW sensor processing, analysis and display issues facing modern Navy platforms and systems. The solutions involve development of novel signal and data processing techniques applied to submarine sonar and combat systems as well as underwater range tracking systems.

1995 – 2003**Ocean & Electronics Engineer, Naval Undersea Warfare Center, Newport, RI**

Functional Team Leader for Tracking and Survey Algorithm software development providing technical management, direction and leadership in the research and development, design and installation of underwater acoustic tracking systems. These systems are nominally hyperbolic multilateration systems that operate on a principle similar to GPS. Developed new algorithms for surveying underwater acoustic sensors and their subsequent use for dynamic tracking. Responsible for the development, adaptation and utilization of GPS geodetic surveying techniques and equipment for underwater acoustic surveying.

1994 – 1995**Ocean & Electronics Engineer, Sea Beam Instruments Inc., E. Walpole, MA**

Systems Engineer and Program Manager for the research, development, design and manufacture of multi-beam swath seafloor mapping sonar systems. Developed sonar systems integrated with GPS, gyroscope and vertical reference unit sub-systems to obtain geo-referenced bathymetric measurements. The systems developed were capable of performing hydrographic surveys to full ocean depth and complied with the accuracy requirements of the International Hydrographic Organization (IHO).

1992 – 1994**Graduate Research and Teaching Assistant, Dept. of Ocean Engineering, University of Rhode Island, Narragansett, RI**

Specialized in Underwater Acoustics with master's thesis entitled *Design and Construction of a Computer Controlled Underwater Acoustic Transducer Calibration Facility*. Project required the design, fabrication, and testing of custom computer peripheral hardware, firmware (drivers), and software.

Completed course work in Chemical Oceanography, Physical Oceanography, Hydrodynamics of Floating and Submerged Bodies, Corrosion Engineering, Oceanographic Systems Engineering, and Oceanographic Data Analysis.

Patents and Awards:

Vice-Presidential Coastal America Partnership Award, *Acoustic Remote Sensing of Eelgrass Beds*; September 1997

United States Patent 5,774,421. *An Underwater Measurement Device*, June 30, 1998

International Test and Evaluation Association *Time-Spatial Position Information and Electro-Optics Professional Achievement Award*, September 2000

United States Patent 6,028,823. *Geodetic Position Estimation for Underwater Acoustic Sensors*, February 22, 2000

United States Patent 6,388,948. *Method and System for Determining Underwater Effective Sound Velocity*, May 14, 2002

United States Patent 7,106,658. *Navigation System and Method Using Directional Sensor*, September 12, 2006

Publications:

“Calibration of Electro–Acoustic Transducers Using Spread Spectrum Signals”, *Journal of the Acoustical Society of America*; In Preparation

“Geodetic Position Estimation of Underwater Acoustic Sensors”, *IEEE Journal of Oceanic Engineering*; In Preparation

“Design, Construction and Testing of a Linear Electrical Generator Excited by Ocean Surface Gravity Waves”, *IEEE Journal of Oceanic Engineering*; In Preparation

“Validation of the CARIB–98 Geoid Height Model using Carrier Phase Differential GPS Measurements”, *IEEE Trans. on Geoscience and Remote Sensing*; In Preparation

“Parameter Estimation for Jacket-Type Platforms Using Free-Vibration Data”, *Journal of Waterway, Port, Coastal, and Ocean Engineering*; to be published September 2011

“A characterization of the scattered acoustic intensity field in the resonance region for simple spheres”, *Journal of the Acoustical Society of America*; Vol. 129 (4), April 2011

“Characterization of scattered acoustic intensity fields in the resonance region of a motionless rigid sphere”, *Journal of the Acoustical Society of America - Express Letter*; Vol. 127 (6), June 2010

“Intercept Detection and Ranging SONAR (IDRS)”, Foreign Comparative Testing Final Technical Report, 2007

“UNCERTAINTY PROPAGATION ANALYSIS: From Position Estimates to Range, Bearing, Elevation and Conical Angles”, Technical Report, MIKEL, Inc., 2007

“Non-Colinear Wavefront Curvature Range Measurement”, Small Business Innovation Research Phase II Final Report, Topic N02-025, MIKEL, Inc., 2006

“Algorithms for Rapid and Accurate Depth Localization of Targets for Mine Avoidance”, Small Business Innovation Research Phase I Final Report Topic N04-218, MIKEL, Inc., 2005

“Models, Algorithms, and Measurements for Underwater Acoustic Positioning”, Ph.D. Dissertation, University of Rhode Island, 2001

“Generalized Multivariate Error Propagation for Zero Memory Non-linear Systems”, *Proceedings of the 8th ASCE Specialty Conference on Probabilistic Mechanics and Structural Reliability*; University of Notre Dame; South Bend, IN; July 2000

“Damage Detection Using Empirical Mode Decomposition Method and a Comparison with Wavelet Analysis”, *Proceedings of the 2nd International Workshop on Structural Health Monitoring*; Stanford University; Stanford, CA; September 1999

“State Estimation for Stochastic Dynamic Systems with Non-Linear Measurements - An Application to Underwater Tracking”, *Proceedings of 13th ASCE Engineering Mechanics Conference*; Johns Hopkins University; Baltimore, MD; June 1999

“Geodetic Position Estimation of Underwater Acoustic Sensors”, *Proceedings of the 134th Meeting of the Acoustical Society of America*; San Diego, CA; December 1997

“Surveying the Atlantic Undersea Test and Evaluation Center (AUTEK) Hydrophone Array”
NUWC Program Technical Report; March 2002

“Installation and Survey Test Plan for the Atlantic Undersea Test and Evaluation Center Hydrophone Replacement Program”
NUWC Program Technical Report; April 2001

“Underwater Acoustic Signal Interference with the AN//BQN-17 Submarine Navigation Sonar System”
NUWC Program Technical Report; March 1998

“Multiplexed Extended Sensor Array: Survey, Accuracy and Coverage Test Results”
NUWC Program Technical Report; September 1997

“Installation and Survey of the Kwajalein Missile Impact Scoring System Hydrophone Array”
NUWC Program Technical Report; April 1997

“Installation and Survey Test Plan for the Ocean Subsystem of the Kwajalein Missile Impact Scoring System”
NUWC Program Technical Report; August 1996

“Bathymetric Survey Offshore Illegani Island, Kwajalein Atoll, Marshall Islands”
NUWC Program Technical Report; August 1996

“Installation and Survey of the Bi-Direction Fiber Optic Telemetry (BIFOTEL) System at Barking Sands, Kauai”
NUWC Program Technical Report; May 1996

“Simulation Study of Hydrophone Position Estimation Utilizing a Weighted Least Squares Algorithm”, Technical Memorandum 952108, Naval Undersea Warfare Center, Newport, RI 1995

“Assessments of Hydrophone Survey Methods”, Technical Memorandum 952109, Naval Undersea Warfare Center, Newport, RI 1995

“Surveying the Barking Sands Underwater Acoustic Range”
NUWC Program Technical Report; March 1995

“Offshore site survey report for the proposed Kwajalein Missile Impact Scoring System”
NUWC Program Technical Report; April 1995

Teaching and Advising Experience

The following two sub-sections describe Teaching and Advising experience performed as Adjunct Assistant Professor (2001–2004), Adjunct Associate Professor (2004–2008) and Research Associate Professor (2008–present).

Teaching

The following is a complete list my undergraduate and graduate teaching and advising experience at the University of Rhode Island. The course descriptions are directly from the University of Rhode Island Undergraduate and Graduate Catalogue with additional information incorporated as necessary. Copies of the course syllabi utilized are available upon request.

Chronological Summary

Year	Semester	Course Number	Course Name	Comment
2011	Fall	OCE/ELE-571	Underwater Acoustics I	On-Site at NUWC
		OCE-495 Sec. 3	Senior Design Project	Design of Autonomous Surface Vehicle
		OCE-215	Ocean Engineering Design I	AUV Design (4 sections)
		OCE-205	Ocean Engineering Design Tools	Team taught (2 sections)
2011	Spring	OCE/ELE-550	Ocean Systems Engineering	Acoustic Vector Sensor Transducer Design
		OCE-495 Sec. 3	Senior Design Project	
2010	Fall	OCE-515	Marine Hydrodynamics	Acoustic Vector Sensor Transducer Design AUV Design (4 sections)
		OCE-495 Sec. 3	Senior Design Project	
		OCE-215	Ocean Engineering Design I	
2010	Summer	OCE-591	Special Problems: Sonar Signal Processing	On-Site at NUWC
2010	Spring	OCE-495 Sec. 1	Senior Design Project	Renewable Energy
		OCE-495 Sec. 2	Senior Design Project	ASV/AUV Collaboration
2009	Fall	OCE-515	Marine Hydrodynamics	Renewable Energy ASV/AUV Collaboration AUV Design (3 sections)
		OCE-495 Sec. 1	Senior Design Project	
		OCE-495 Sec. 2	Senior Design Project	
		OCE-215	Ocean Engineering Design I	
2009	Spring	ELE-313	Linear Systems	Shipboard Transient Detection and Localization
		OCE-592	Special Problems	
2008	Fall	OCE/ELE-550	Ocean Systems Engineering	
2008	Spring	OCE-592	Special Problems	Advanced MATLAB Programming
2007	Fall	OCE/ELE-550	Ocean Systems Engineering	
2007	Spring	OCE-496	Senior Design Project	GABBIES [†] Instrument
2006	Fall	OCE-515	Marine Hydrodynamics	GABBIES Instrument Electro-Acoustic Transducer Calibration
		OCE-495	Senior Design Project	
		OCE-592	Special Problems	
2003	Spring	OCE-560	Ocean Laboratory	
2002	Fall	OCE-310	Ocean Measurements	
2002	Spring	EGR-106	Fund. of Eng. II	
2001	Fall	OCE-310	Ocean Measurements	

[†]GABBIES: Geodetic Acoustic Benchmark Beacon Inverted Echo Sounder