

Faculty CV: Longer, show EVERYTHING relevant you have done

**Business Address**

Harvard University  
John A. Paulson School of Engineering and Applied Sciences  
Cambridge, MA 02138  
Email: [redacted] Website: [redacted]

**Home Address**

Name at top, then contact

[redacted]  
[redacted]  
[redacted]

**Education**

**Massachusetts Institute of Technology** Cambridge, MA  
Doctor of Philosophy in Mechanical and Ocean Engineering, February 2016

Thesis: [redacted]

Advisor: [redacted]

**Massachusetts Institute of Technology** Cambridge, MA  
Masters of Science, Ocean Engineering, September 2011

Thesis: [redacted]

Advisor: [redacted]

**Florida Atlantic University** Boca Raton, FL

Bachelor of Science, Ocean Engineering, Summa Cum Laude, May 2009  
Graduated at the top of Ocean Engineering class. Completed a comprehensive engineering curriculum including a senior capstone designing an autonomous surface vehicle for operation in riverine and coastal environments.

**Awards**

Miller Prize for first place Oceans Conference Taiwan Student Poster Competition (2014), American Bureau of Shipping Scholarship at MIT (2009), NSF Fellowship Program Honorable Mention (2009), FAU Ocean Engineering Senior Award (2009), FAU Ocean Engineering Academic and Leadership Awards (2009), SNAME John V. Wehausen Scholarship for Hydrodynamics (2009), Intercollegiate Sailing Association All-Academic Sailing Team-First Team (2008), FAU SNAME Student Scholarship (2008), FAU University Scholar Award for School of Engineering and Computer Science (2008), ASNE Peterson Builders Scholarship (2007)

**Research Experience**

**Postdoctoral Fellow:**

**Harvard John A. Paulson School of Engineering and Applied Sciences** Cambridge, MA  
February 2016-Present

Faculty Supervisor: [redacted]

The goal of our project is to replicate the intricate cooperative behaviors observed in fish schooling using a swarm of low cost underwater vehicles. Due to the need for a large number of agents to make up our swarm, each robot must be low cost and easily fabricated, placing constraints on vehicle design and capabilities. To enable coordinated behavior between independent vehicles, knowledge of the state of surrounding vehicles is necessary, yet how this knowledge is best obtained is not clear. While in nature fish rely on vision and feedback from the lateral line to mediate schooling behavior, the optimal approach to sensing or communication on small underwater robots is an intriguing research question. The development of underwater swarming robots is a fantastic intersection of my interests in marine vehicles and innovative sensor technologies.

Education, Awards, Research are a good starting order. Include thesis title and advisor

This is a package document, not a quick-skim like a standard resume, so a few sentences of description is good.

[redacted]

[REDACTED]

**Sponsored Research Staff:**

**MIT Computer Science and Artificial Intelligence Lab**

Cambridge, MA  
October 2015-January 2016

Advisor: [REDACTED]

As Sponsored Research Staff I worked collaboratively with MIT postdocs and researchers to contribute to the development of a new graduate class 2.166: *Autonomous Vehicles*. To be offered for the first time in the Spring of 2016, this is a hands-on, project-focused course on self-driving vehicles and high-level autonomy. Collaborating in the creation of the course allowed me to develop technical skills including the use of the Robot Operating System (ROS) and Raspberry Pi computers, as well as contribute my experience as a course instructor to the structure of the course, schedule and format of deliverables, and teaching materials.

List in descending chronological order.

**Research Assistant:**

**MIT Department of Mechanical Engineering**

Cambridge, MA  
Singapore

Advisor: [REDACTED]

September 2011- October 2015

Researched the application of distributed flow sensing principles inspired by the fish lateral line sensory organ to unmanned marine vehicles. Evaluated the suitability of distributed pressure sensing for ocean engineering applications through a series of towing tank and field experiments using commercially available pressure sensors. Formulated experimentally driven design guidelines for distributed pressure sensor arrays in hydrodynamic sensing applications. Developed highly conformal and waterproof 'smart-skin' pressure sensor arrays utilizing closed-cell carbon black-polydimethylsiloxane (CBPDMS) composite foam. Leveraged the low Young's modulus and watertight structure of closed-cell PDMS foam to create sensor arrays appropriate for hydrodynamic sensing applications and prolonged exposure to fluid environments. Characterized CBPDMS foam sensor arrays using a series of bio-inspired hydrodynamic stimuli including Karman vortex shedding and surface water waves.

[REDACTED] Ph.D. Thesis, Dept. Mech. Eng., Mass. Inst. Tech., Cambridge, MA, 2015.

**MIT Department of Mechanical Engineering**

Cambridge, MA  
Singapore

Advisor: [REDACTED]

September 2009- September 2011

Investigated the formation and shedding of leading edge vortices on hydrofoils using pressure sensors embedded in a cast urethane hydrofoil. Force measurements were taken simultaneously to correlate the impact of shed vortices on the lift and pitching moment on the foil. The location, size, and type of flow structures near the foil surface were verified using particle image velocimetry (PIV) imaging techniques.

[REDACTED] S.M. Thesis, Dept. Mech. Eng., Mass. Inst. Tech., Cambridge, MA, 2011.

[REDACTED]

[REDACTED]

**Undergraduate Researcher:**

**FAU Department of Ocean Engineering**

Boca Raton, FL

Advisor: [REDACTED]

January 2007-December 2008

Designed flapping foil propulsor test apparatus for use in a circulating water tank. Participated in graduate research project investigating the hydrodynamics of the unique head shape of hammerhead sharks. Collaborated on the design and construction of a solid wing sail for use on a wind and solar powered autonomous surface vehicle.

**Engineering Intern:**

**Naval Undersea Warfare Center**

Newport, RI

Advisors: [REDACTED]

Summer 2008

Participant in the Naval Research Enterprise Internship Program. Investigated failure modes of urethane hose modules used in towed sonar arrays in an effort to improve reliability and service life. Conducted experiments in the Quiet Water Tunnel facility at NUWC division Newport. Designed and patented an apparatus for measuring turbulence on towed sonar arrays.

**Teaching Experience**

**Massachusetts Institute of Technology**

**Departments of Electrical Engineering and Computer Science and Mechanical Engineering**

6.811J/HST420J/2.S994: Principles and Practices of Assistive Technology, Fall 2015

Co-Instructor

Co-Instructor for project based course where teams of students work closely with a client with a disability to develop a custom piece of assistive technology. Worked closely with two students teams as a project mentor, helped facilitate recruitment and screening of clients, developed and presented selected class lectures.

**Massachusetts Institute of Technology**

**Department of Electrical Engineering and Computer Science**

6.811: Principles and Practices of Assistive Technology, Laboratory Assistant Fall 2014

Mentored two student groups in the development of a piece of assistive technology for a client with a disability. Team members interacted with their client throughout the course of the semester, focusing on a user-centered design process for their technology.

**Massachusetts Institute of Technology**

**Department of Mechanical Engineering**

2.017j: Design of Electromechanical Robotic Systems, Teaching Assistant Spring 2012

Undergraduate design course in which student teams designed, constructed, and tested autonomous sailboats. Assisted students on the hydrodynamic design of their vehicles, and the strategies and requirements for autonomous sailing.

2.154: Maneuvering and Control of Surface and Underwater Vehicles, Fall 2011

Teaching Assistant

Graduate course focusing on the equations of motion for marine vehicles, derivation of hydrodynamic coefficients, and optimal control strategies. Assisted students individually on homework assignments and class projects. Developed class labs and final project.

2.22: Design Principles for Ocean Vehicles, Teaching Assistant Spring 2011

Graduate course focusing on hydrodynamics, marine vehicle motions, and vortex induced vibrations. Developed and conducted class labs, and wrote homework assignments and solutions. Lectured on vehicle motion and survivability in storm conditions.

The details of all teaching experience is important for a faculty (application) CV.

[REDACTED]

**Laboratory Management**

**MIT Towing Tank**

Cambridge, MA  
September 2009-October 2015

Coordinated the use of the MIT Towing Tank facility for class labs and outside experiments. Trained visitors on the use of the towing carriage, wave maker, wave probes, and force transducers. Oversaw physical renovation and refit of Towing Tank facility.

**CENSAM Testing Tank**

Singapore  
January 2011- May 2015

Designed a 10m x 1.2m x 0.8m testing tank for the CREATE Campus in January 2011. The tank is composed of a T-slot aluminum frame and raised glass test section allowing optically clear imaging in all planes. The tank utilizes a four-axis motion gantry to allow for model maneuvering and feedback control experiments.

Similarly important is research (publications) and (lab) management + people skills.

**Publications**

**Peer Reviewed Journal**

[REDACTED]  
[REDACTED] r  
[REDACTED] *Smart Materials and Structures*,  
[REDACTED] 2013.

**Submitted Journal**

[REDACTED]  
[REDACTED] *Sensors and Actuators A: Physical*, submitted. arXiv: [REDACTED] [physics.ins-det].

**Conference Publications**

[REDACTED]  
[REDACTED] in *Proceedings of Oceans 2014: MTS/IEEE Taipei, April 7-10, 2014, Taipei, Taiwan*.

[REDACTED]  
[REDACTED] in *Proceedings of the 11th International Conference on Fast Sea Transportation, FAST 2011, September 26-29, Honolulu, HI, USA*. T. Peltzer, Ed. Alexandria: ASNE, 2011. pp [REDACTED]

[REDACTED]  
[REDACTED] in *Proceedings of Oceans 2009: MTS/IEEE Biloxi - Marine Technology for Our Future: Global and Local Challenges, October 26-29, 2009, Biloxi, MS, USA*. Available: IEEE Xplore, <http://ieeexplore.ieee.org/>.

**Patents**

[REDACTED] The United States of America as Represented by the Secretary of the Navy, assignee. U.S. Patent [REDACTED] September 24, 2013.

[REDACTED]

- Presentations** [REDACTED] (APS Division of Fluid Dynamics 68<sup>th</sup> Annual Meeting, 2015) [REDACTED]  
 [REDACTED]  
 [REDACTED] (MIT Museum Nautical Night, 2015) [REDACTED]  
 [REDACTED]  
 [REDACTED] (MTS/IEEE Oceans Taipei Student Poster Competition, 2014) [REDACTED]  
 [REDACTED]  
 [REDACTED] (Reception Hosted by Diane Greene and Mendel Rosenblum on the Occasion of the America’s Cup, 2013) [REDACTED]  
 [REDACTED]  
 [REDACTED] (Naval Engineering Education Center Opening Workshop, 2010) [REDACTED]  
 [REDACTED]  
 [REDACTED] (Marine Renewable Energy Conference Technical Conference, 2010) [REDACTED]  
 [REDACTED]  
 [REDACTED] (APS Division of Fluid Dynamics 63<sup>rd</sup> Annual Meeting, 2010) [REDACTED]

**Activities** Member of the American Physical Society, Member of the Society of Naval Architects and Marine Engineers, Member of Marine Technology Society, Member of IEEE Oceanic Engineering Society, MIT Triathlon Club, MIT Festival Jazz Ensemble (2010-2012), Captain FAU Sailing Club (2007-2009), Member of the FAU Marching Band (2005-2006), Member of the FAU Symphonic Band (2006). Interests include sailing, marathon running, triathlon, and adaptive technology.

**Software** Matlab, Simulink, Labview, Solidworks, LaTeX, Microsoft Office

**Volunteer Experience** **Achilles International** Boston, MA  
 Running Guide Fall 2014-Present  
 Combining my interests in endurance athletics and assistive technology by volunteering as a guide with Achilles International. Achilles provides adaptive running and handcycling opportunities to athletes with a variety of disabilities.

**United States Formula 18 Class Association** Boston, MA  
 Class Secretary and Eastern Area Representative 2011-2015  
 Coordinate Formula 18 activities in the Northeast region including scheduling events and communicating with event organizers. Manage content on USF18.com and USF18 social media.

[REDACTED]

**MIT Nautical Association**

Team Racing Chair

Cambridge, MA  
Fall 2009-Present

The MIT Nautical Association provides sailing lessons and racing to the MIT community. Served as Vice-Commodore from 2009-2010 and Commodore from 2010-2012. Currently serving as Team Race Chair and organize a weekly summer team racing series.

**Intercollegiate Sailing Association**

Sailing Judge and Umpire

New England Region  
Fall 2009-Present

Serve as a judge and umpire at collegiate and youth sailing events across New England.

**Hugh O'Brien Youth Leadership**

Seminar Staff

Findlay and Ada, OH  
2004-2009

Attended the Hugh O'Brien Youth Leadership Ohio West seminar in 2003 as an ambassador then returned annually from 2004 until 2009 as junior and senior seminar staff leading groups of high school Juniors.

**Coaching  
Experience**

**The Newman School**

Head Sailing Coach

Boston, MA  
Spring 2010-Spring 2014

Head high school sailing coach for international prep school in Boston. Responsible for supervising and coaching team of 15 sailors during three afternoon practices per week.

**Edgewater Yacht Club**

Head Instructor and Race Team Coach

Cleveland, OH  
Summer 2009

As head instructor responsible for curriculum development and safety for sailing camp of approximately 50 students and 15 instructors. As head race team coach responsible for coaching team of approximately 20 students during weekly practice sessions and weekend travel events.

**Cleveland Yachting Club**

Instructor and Race Team Coach

Rocky River, OH  
Summer 2007

Head instructor for intermediate sailing class consisting of approximately 20 students between the ages of 12 and 14. As race team coach responsible for weeknight practices and weekend events for 21-person team.

**Research  
References**



This application asked for details on references to be included on the CV. The CV will be unique to each position, similar to the process of adjusting a standard resume.

**Teaching  
References**

