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- Education **University of California, Berkeley** - Berkeley, CA
Ph.D., Integrative Biology, May 2013.
Flight biomechanics and maneuvering perspectives on the evolution of flight in vertebrates. Formerly Ph.D. candidate in Mechanical Engineering at MIT/WHOI Joint Program; transferred in 2007. Teaching assistant for mechanics and materials, thermodynamics and fluid flow core classes at MIT, biomechanics, biomechanics lab, neurophysiology / motor control, and physiology classes at UC Berkeley. Additional courses and research at Harvard University and UW Friday Harbor Labs. Advisor: R. Dudley
- Naval Postgraduate School** - Monterey, CA
M.S., Engineering Science (Mechanical Engineering), September 2001. Convection, conduction, radiative heat transfer, optimization, finite element analysis, with Bettis Reactor Engineering School.
- Bettis Reactor Engineering School** - West Mifflin, PA
August 2000. Nuclear engineering of pressurized water reactors, including heat transfer, fluid flow, structural mechanics, reactor physics, materials, dynamics and control, shielding, and steam and reactor plant design. Prototype reactor training at West Milton, NY. Nuclear shipyard training at Newport News, VA.
- Massachusetts Institute of Technology** - Cambridge, MA
S.B., Mechanical Engineering; S.B., Electrical Engineering
M.Eng., Electrical Engineering and Computer Science, all June 1999.
Induction motor parameter estimation using transients from PWM inverters and radial basis functions; concentrations in power electronics, control and signal processing, thermal power systems, microcontrollers. Digital and analog design, circuit board fabrication, undergraduate projects on computerized Lego bricks, motor control teaching hardware, and deployable instrumentation for power electronics studies.
- Experience **United States Naval Academy** - Annapolis, MD
Assistant Professor of Weapons and Systems Engineering, 2016-present.
- University of North Carolina** - Chapel Hill, NC
Postdoctoral research associate in biology, 2013-2016. Biomechanics, group behavior in flying animals. Computer vision, automated camera calibration in the field, automatic tracking, trajectory estimation, and social network metrics applied to animal aggregations and swarms. Development of affordable, open-architecture code and camera setups for 3D field biomechanics and kinematics studies. Guest lectures in comparative biomechanics, physiology, mathematical modeling in biology. Advisor: T. Hedrick
- United States Navy** - Washington, DC
Lieutenant, nuclear engineer, Naval Sea Systems Command (08) - Naval Nuclear Propulsion Program, 1999-2004. Responsibilities in oversight, design, operation, maintenance, regulation, and disposal of naval nuclear plants installed in ships and submarines. Interfacing between prime contractors, vendors, and the fleet, management of development efforts, and all technical aspects of nuclear power plant engineering. Qualified radiation worker. Specific responsibilities included *Nimitz* class aircraft carrier electrical systems, reactor and propulsion plant fluid systems for research submarine NR-1, hydrodynamics of *Seawolf* and *Virginia* class attack submarines, and advanced submarine concept studies, including NR-1 replacement studies and distributed propulsion. Coordinated efforts with DARPA and ONR. Planning for initial sea trials in *USS Virginia (SSN-774)*. Submarine naval architecture. *Unclassified description from detaching fitness report*
- Other experience **McMurdo Station, Antarctica**, January 2010. NSF 2010 International Graduate Training Course in Antarctic Marine Biology. Marine research experience at UW Friday Harbor Labs and aboard *SSV Corwith Cramer*, *RV Oceanus*, *RV Tioga*, and *RV John H Martin*. At sea training in *USS Pintado (SSN-672)* and *USS Portsmouth (SSN-707)*.

Publications

Names in **bold** indicate **undergraduates** with whom I have worked.

Stevenson, R., Evangelista, D., and Looy, C. (2015). When conifers took flight: a biomechanical evaluation of an imperfect evolutionary takeoff. *Paleobiology*, 41:205–225

Evangelista, D., **Cam, S.**, **Huynh, T.**, **Kwong, A.**, **Mehrabani, H.**, **Tse, K.**, and Dudley, R. (2014b). Shifts in stability and control effectiveness during evolution of Paraves support aerial maneuvering hypotheses for flight origins. *PeerJ*, 2:e632

Mehrabani, H., **Ray, N.**, **Tse, K.**, and Evangelista, D. (2014). Bio-inspired design of ice-retardant devices based on benthic marine invertebrates: the effect of surface texture. *PeerJ*, 2:e588

Evangelista, D., **Cam, S.**, **Huynh, T.**, **Krivitskiy, I.**, and Dudley, R. (2014a). Ontogeny of aerial righting and wing flapping in juvenile birds. *Biology Letters*, 10:20140497. Cover image

Theriault, D., Fuller, N., Jackson, B., **Bluhm, E.**, Evangelista, D., Wu, Z., Betke, M., and Hedrick, T. (2014). A protocol and calibration method for accurate multi-camera field videography. *J exp Biol*, 217:1843–1848

Evangelista, D., **Cardona, G.**, **Guenther-Gleason, E.**, **Huynh, T.**, **Kwong, A.**, **Marks, D.**, **Ray, N.**, **Tisbe, A.**, **Tse, K.**, and Koehl, M. A. R. (2014c). Aerodynamic characteristics of a feathered dinosaur measured using physical models. Effects of form on static stability and control effectiveness. *PLoS ONE*, 9(1):e85203

Denny, M., Dorgan, K., Evangelista, D., Hettinger, A., Leichter, J., Ruder, W., and Tuval, I. (2011). Anchor ice and benthic disturbance in shallow Antarctic waters: Interspecific variation in ice nucleation characteristics. *Bio Bull*, 221(2):155–163. Editor's pick and cover image

Koehl, M. A. R., Evangelista, D., and Yang, K. (2011). Using physical models to study the gliding performance of extinct animals. *Integ Comp Biol*, 51(6):1002–1018

Evangelista, D., Hotton, S., and Dumais, J. (2011). The mechanics of explosive dispersal and self-burial in the seeds of the filaree, *Erodium cicutarium* (Geraniaceae). *J. exp. Biol.*, 214:521–529. Editor's pick, featured in Inside JEB, Science Now; mentioned in Vogel, *Comparative Biomechanics*

Evangelista, D., Fernández, M. J., **Berns, M. S.**, Hoover, A., and Dudley, R. (2010). Hovering energetics and thermal balance in Anna's Hummingbirds (*Calypte anna*). *Physiol Biochem Zool*, 83(3):406–413

White, J. K., Sun, A., Killien, L., and Evangelista, D. J. (2006). Percutaneous aortic valve replacement in a re-animated postmortem heart. *EuroIntervention*, 1:A19–A23

Conference talks

Lohmann, A., Evangelista, D., Waldrop, L., Mah, C., and T, H. (2016). Covering ground: movement patterns and random walk behavior in *Aquilonastra anomala* sea stars. In *Society for Integrative and Comparative Biology Annual Meeting*, Portland, OR

Khandelwal, P., Evangelista, D., and Hedrick, T. (2016). The glide of the dragon: glide characterization and performance of *Draco dussumieri*. In *Society for Integrative and Comparative Biology Annual Meeting*, Portland, OR

Evangelista, D., **Ray, D.**, and Hedrick, T. (2015b). 3D tracking and network-based analysis of freely flying Chimney Swift flocks entering a roost at dusk. In *Mid-Atlantic Regional SICB DVM*, Newark, NJ

Lohmann, A., Evangelista, D., Waldrop, L., Mah, C., and T, H. (2015). Patterns in sea star movement. In *Southeast Regional SICB*, Atlanta, GA

Ray, D., Evangelista, D., and Hedrick, T. (2015). Organizational principles of synchronization in Chimney Swifts. In *Southeast Regional SICB*, Atlanta, GA

Evangelista, D. and Hedrick, T. (2015). Free flight kinematics of massed Chimney Swifts entering a chimney roost at dusk. In *Statistical and Applied Mathematical Sciences Institute (SAMSI)*

- Challenges in Computational Neuroscience (CCNS) Opening Workshop*, Research Triangle Park, NC
- Evangelista, D. (2015a). Free flight kinematics of massed Chimney Swifts entering a chimney roost at dusk. In *Wake Audubon Society Chimney Swift Conservation Forum *invited talk*, Raleigh, NC
- Evangelista, D. (2015b). Free flight kinematics of massed Chimney Swifts entering a chimney roost at dusk. In *ICRA*, Seattle, WA
- Evangelista, D., Khandelwal, P., Rader, J., and Hedrick, T. (2015a). Free flight kinematics of massed Chimney Swifts entering a chimney roost at dusk. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, West Palm Beach, FL
- Jackson, B., Evangelista, D., and Hedrick, T. (2015). 3D for the people: motion capture in the field with consumer-grade cameras and open-source software. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, West Palm Beach, FL
- Evangelista, D. and Hedrick, T. (2014). Measurements and models of large flocks of Chimney Swifts entering a chimney roost at dusk. In *Abstracts or papers presented to the American Mathematical Society*, volume 35, pages 1105–92–203, Greensboro, NC. invited talk
- Evangelista, D. (2014). Four thousand Chimney Swifts entering a chimney roost at dusk, and attempts to track them all without going insane. In *Southeast Regional Society for Integrative and Comparative Biology*, Chapel Hill, NC
- Lohmann, A.**, Evangelista, D., and Hedrick, T. (2014). Patterns in starfish movement and foraging. In *Southeast Regional Society for Integrative and Comparative Biology*, Chapel Hill, NC
- Hedrick, T., Shelton, R., Jackson, B., and Evangelista, D. (2014b). The mechanics and behavior of Cliff Swallows in tandem pursuit and group flights. In *7th World Congress of Biomechanics*, Boston, MA
- Hedrick, T., Shelton, R., Jackson, B., and Evangelista, D. (2014a). The free-flight mechanics of Cliff Swallows in tandem pursuit and group flights. In *17th US National Congress on Theoretical and Applied Mechanics*, East Lansing, MI
- Stevenson, R.**, Evangelista, D., and Looy, C. V. (2013a). Flight of the conifers: Reconstruction of the flight characteristics of Paleozoic winged conifer seeds. In *Botanical Society of America Annual Meeting, July 27-31, 2013*, New Orleans, LA. Won Maynard F. Moseley Award for best student presentation in paleobotany
- Cam, S.**, Evangelista, D., **Ho, M.**, **Krivitskiy, I.**, **Lin, Y.**, **Stevenson, R.**, and Dudley, R. (2013). Cute baby birds and flight control: a coming of age story of intrigue, flips, falls from great heights, and high speed cameras. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, San Francisco, CA
- Mansfield, S.**, **Carrier, L.**, **Shah, S.**, and Evangelista, D. (2013). Design of a phased array acoustic tracking system for flight biomechanics tracking studies. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, San Francisco, CA
- Tse, K.**, **Mehrabani, H.**, **Ray, N.**, and Evangelista, D. (2013). First steps toward bio-inspired design of ice-retardant devices. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, San Francisco, CA
- Huynh, T.**, Evangelista, D., and Marshall, C. (2013). Analysis of the fluid flow through the complex internal respiratory structures of an extinct Paleozoic echinoderm. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, San Francisco, CA
- Stevenson, R.**, Evangelista, D., and Looy, C. V. (2013b). Reconstruction of the flight characteristics of winged seeds of Late Paleozoic conifers. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, San Francisco, CA
- Evangelista, D. J., **Cardona, G.**, **Ray, N.**, **Tse, K.**, and **Wong, D.** (2012). Measurement of the aerodynamic stability and control effectiveness of human skydivers during free fall and directed aerial

descent. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, Charleston, SC

Chun, C., Evangelista, D., **Huynh, T.**, **Kwong, A.**, and **Tse, K.** (2011). Aerodynamic characteristics of feathered dinosaur shapes measured using physical models: A comparative study of maneuvering. In *Society of Vertebrate Paleontology Annual Meeting, Nov 2-5*, Las Vegas, NV

Tisbe, A., **Guenther-Gleason, E.**, Evangelista, D., and Koehl, M. A. R. (2011). Effects of leg and tail feathers on the gliding performance and aerodynamic stability of a small dinosaur. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-5*, Salt Lake City, UT

Evangelista, D. (2009). Up, up, and away! The jump of the amphipod *Hyale pugettensis*. In *Society for Integrative and Comparative Biology Annual Meeting, Jan 3-7*, Boston, MA. Winner of 2009 Best Student Presentation, Division of Invertebrate Zoology; corresponding manuscript in preparation

In review **Lohmann, A.**, Evangelista, D., Waldrop, L., Mah, C., and T, H. (in review). Covering ground: movement patterns and random walk behavior in *Aquilonastra anomala* sea stars. *Submitted to Biol Bull*

Grants **National Science Foundation IGERT** Graduate Fellowship, Berkeley Center for Integrative Biomechanics Education and Research, 2010-2012

UC Berkeley Chancellor's Fellowship, 2008-2010

Friday Harbor Labs, Stephen and Ruth Wainwright Fellowship, 2009

National Defense Science and Engineering Graduate Fellowship, 2004

NSF Minority Graduate Research Fellowship, 1999

Awards & honors UC Berkeley, Department of Integrative Biology **Outstanding Graduate Student Instructor**, 2009-2010

SICB Division of Invertebrate Biology Best Student Presentation, 2009

Navy and Marine Corps Achievement Medal, 2004

Several MIT undergraduate writing prizes, 1999

Research interests Flight and swimming, gliding and parachuting, maneuvering and control; transitions through free surfaces, jumping, launching and landing, impact; agility, disturbance, control, and turbulence; interactions between fluid flow and elastic structures, evolution, vertebrates, invertebrates

Biomechanics of fast movements, aerodynamics, ballistics in plants

Modeling, numerical methods, and experimental measurement; biomechanics in the field and in extreme environments, deployable instrumentation for biomechanics and ecomechanics

Biology and engineering, bio-fluid dynamics and heat transfer in organisms, biologically-inspired design and control, optimization

Teaching interests Systems engineering, dynamics and control, mechatronics, computer vision; physics and engineering principles applied to biology, especially mechanical design, system dynamics and control, thermodynamics and fluid flow; reverse engineering; biological inspiration in engineering.

Comparative biomechanics, the role of biomechanics in evolutionary transitions, ecology and ecomechanics; comparative anatomy and physiology; laboratory and modeling techniques in biomechanics

Leadership and mentoring of undergraduates, including on research projects; proven track record of coaching undergraduates through their projects to successful presentations at national meetings

Previously teaching assistant for: Mechanics and Materials, Thermodynamics and Fluid Mechanics, Comparative Biomechanics, Biomechanics Lab, Physiology, Neurophysiology

Outreach	<p>Mentoring of underrepresented STEM students under UC Berkeley Undergraduate Research Apprentice Program</p> <p>STEM graduate school outreach with undergraduate veterans under UC CalVets program</p> <p>Outreach with inner city third grade science students at PS 123 in Jersey City, NJ, high school students in New York City, NY and Oakland, CA Unified School District “Dinner with a Scientist” event</p>
Skills	<p>Teaching, mentoring & advising, leadership, program management, technical writing, public speaking</p> <p>Professional Engineer (Mechanical), scientific SCUBA diver</p> <p>Electronics fabrication, circuit design, board layout, soldering, testing, repair, programming, scientific computing, data analysis, Python, R, Matlab, C/C++, Arduino and mbed microcontrollers;</p> <p>Machining and rapid prototyping, laser cutting, 3D printing, design;</p> <p>Experimental design, instrumentation & measurement; photography, video, image and signal processing, flow visualization, scientific illustration; scientific and biomechanics field work in diverse environments</p>
Memberships	IEEE, ASME, ANS, SNAME, MTS, SICB, Sigma Xi, SEB, SVP
Service	Journal referee for <i>Journal of Experimental Biology</i> , <i>PLOS One</i> , <i>Proceedings of the National Academy of Sciences</i> , <i>PeerJ</i> , <i>Journal of Theoretical Biology</i> , <i>Integrative and Comparative Biology</i> , <i>Journal of Morphology</i> , <i>Integrative Zoology</i> , <i>The Auk</i> , <i>Physiological and Biochemical Zoology</i> .
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