

Associate Professor
 Department of Electrical Engineering
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EDUCATION

Ph.D. (Sept. 2007) EECS. UC Berkeley, Berkeley, CA.
B.S. (May 2000) Computer Science, Physics minor. Carnegie Mellon University, Pittsburgh, PA.
B.S. (May 2000) Mathematics. Carnegie Mellon University, Pittsburgh, PA.

EXPERIENCE

8/2014: Associate Professor, Department of Electrical Engineering, University of Hawaii – Manoa.
1/2008-07/2014¹: Assistant Professor, Department of Electrical Engineering, University of Hawaii – Manoa.
9/2007-1/2008: Postdoc, Dept. of Electrical Engineering, University of California – Berkeley.
 Lead PI: Clark T.-C. Nguyen
9/2001-9/2007: Graduate Student Researcher/Instructor, EECS, University of California – Berkeley.
 Lead PIs: James Demmel, Richard S. Muller
5/2000-9/2001: Research Assistant, Carnegie Mellon University, Pittsburgh, PA.
 Lead PI: Guy Blelloch

HONORS AND AWARDS

- UH System** Regents Medal for Excellence in Teaching, Spring 2016
 Nominated: Fall 2012, Fall 2013, Fall 2015
- Distinguished Member, UH Chapter of the National Academy of Inventors, Fall 2015
- 1st Place University of Hawaii Business Plan Competition, Akabotics (role: Advisor), 2nd Place Flow (first for UH), NVC (winner of fast pitch competition), and Global Venture Labs Investment Competition, Spring 2015
- Best Pitch - Venturewell Pathways to Innovation, Spring 2015 (competed against schools such as Case Western Reserve and Colorado School of Mines)
- 1st Place – UH Breakthrough Challenge – IlluminesceSense (role: Advisor), Fall 2014
- Received Tenure, Fall 2014
- UH System** Frances Davis Award for Excellence in Undergraduate Education, Spring 2014
 (selective, first recipient from Engineering)
- ASEE Office of Naval Research Summer Faculty Fellowship, Summer 2011 and Summer 2013
- National Academy of Emerging Frontiers in Engineering Education, 10/2013.
- 1st Place, UH Breakthrough Competition, Chameleon Skin (role: Advisor), Fall 2012
- 2nd Place, University of Hawaii at Manoa Business Plan Competition, Surgical Lighting Solutions (role: Advisor for Justin Carland) Spring 2012
- 3rd Place, University of Hawaii at Manoa Business Plan Competition, 3D Wind Anemometer (role: Advisor for John Hirano, invented technology) Spring 2011
- 2nd Place, NIST Microrobotics Challenge, Shanghai, China, Spring 2011 (role: Advisor)
- Technology Achievement Award, UC Berkeley, Venture Labs, Fall 2009
- Ross N. Tucker Award**, May 2008
 “Recognizes superior work and scholarship in the characterization, development and/or use of semiconductor, magnetic, optical or electronic materials.”
- UC Berkeley Certificate Management of Technology, Fall 2007

¹ On leave without pay (LWOP) for personal reasons Fall 2011 – Spring 2012

17. Grand Prize Winner – Hong Kong University of Science and Technology International Business Plan Competition. 1st out of 150 teams competing internationally (June 2007)
18. **Sevin Rosen Funds Award for Innovation**, Spring 2007
19. Siebel Scholars Fellowship, Fall 2006 – Spring 2007
20. Best Presentation Award, Berkeley Sensor and Actuator Center (BSAC), September 2006
21. Microelectronics Fellowship, Fall 2001 – Spring 2002
22. Carnegie Mellon University College and University Honors, May 2000

PROFESSIONAL AFFILIATIONS

IEEE Member (since 2008),
 ACM Member (since 6/2010),
 MANCEF member (since 2011), Board of Advisors

GRANTS AND CONTRACTS

1. **Pending:** RO1 NLM NIH: An Integrative Bioinformatics Platform with Application in Single Cancer Cells
 \$900,800 – 1 month overload – Co-I
 Summer 2016 – Summer 2020
 My portion of this grant is in software engineering of bioinformatics pipelines to improve single-cell upstream and downstream analysis.
2. **Current:** Department of Navy: Graphene-based Sensors, Ultra-low power electronics, and GPU Simulation
 \$398,100 (/ \$1,000,000) – PI
 Spring 2012 – Continuing (extended until 2020)
 Develop novel graphene-based architectures for sensors and electronics integrated with CMOS, investigate sub-threshold electronics and electromechanical sensors for reducing power consumption – grant encompasses rapid prototyping, simulation, design, fabrication, and testing of devices.
3. **Current:** Local Donation
 \$10,000 – PI
 Funds are used for innovative distributed sensor arrays such as roadway and optical sensors. Projects include students participating in capstone design.
4. **Current:** NSF EPSCOR: Ike Wai, Award #1557349
 \$20,000,000 – Engineering Lead Participant
 6/1/2016 – 5/31/2021
 Responsible for designing, fabricating, and testing novel down-well sensors for water quality and salinity monitoring necessary for modeling and managing water resources within Hawaii.
5. **Current:** NASA PICASSO: Compact Color Biofinder (CoCoBi) for fast, non-contact detection of bio-markers, biomolecules and polyaromatic hydrocarbons in Ocean Worlds
 \$655,050 – Co-PI
 Fall 2017 – Fall 2020 (funding in transit, so dates are approximate)
 I will be investigating high-speed electronics and low-cost components and fabrication technology for creating fluorescent imaging of life existence from a camera.
6. **Current:** UH Fabrication Lab (funded internally in conjunction with Venturewell Epicenters)
 \$112,000 – Director
 Spring 2012 – Now (main funding came Spring 2015)
 I am building a MakerSpace that will support innovation at UH. This space and related efforts have been recognized through a national movement led by President Obama and the National Science Foundation. <http://make.xsead.cmu.edu/schools/schools/18>
7. **Current:** NSF MRI: Development of the CyberCANOE- a Cyber-enabled Collaboration Analysis Navigation and Observation Environment

- \$600,000 – Co-PI (PI: Jason Leigh)
 Fall 2015 – Fall 2018
 The CyberCANOE mends together data-intensive analysis and visualization, human-computer interaction, and virtual reality.
8. **Completed:** NSF I-Corps: Maintenance Dredging Innovations for Coastal Flooding Prevention
 \$50,000 – PI
 Fall 2015 – Spring 2016
 Furthering the Innovation and Entrepreneurship thrust of UH, this project is a student-driven project on building robotic dredging technology for securing our coastal waterways.
 9. **Completed:** Department of Agriculture: New Engineered Approaches for Recovering Disperse Populations of Low-Tolerance Pathogens from Food, Department of Agriculture
 \$498,413 – Co-PI (PI: Daniel Jenkins)
 Fall 2013 – Fall 2016
 The overall objective of this proposal is to develop and transform technologies including nanoparticle-assisted biofilm disruption and electroflotation for rapid recovery of multiple pathogens such as Salmonella, E. coli, Campylobacter, Listeria and other food-borne pathogens from food.
 10. **Completed:** Evaluation of Technologies for Mass Fabrication of Microfluidic Devices, Oceanit
 \$15,000 – PI
 Spring 2013 – Fall 2014
 Personalized medicine is enabled by microfluidic devices attached to mobile phones. This project explores the low-cost fabrication and functioning of those devices in terms of reliability, yield, and performance. The result of this project could be commercialized on a large scale in coagulation profiling for people at risk of stroke.
 11. **Completed:** Renewable Energy and Island Sustainability, Department of Energy
 \$2,500,000 – Co-PI (PI: Anthony Kuh) – ~\$200,000 to D. Garmire for student and supplies
 Summer 2010 – Summer 2014
 This project ran for 4 years and involves the addition of a certificate program and curriculum associated with sustainability and clean energy. Graduate students as well as undergraduate students are recruited on various research projects related to energy and sustainability. My role has focused on improving monitoring sensors and smart-grid devices.
 12. **Completed:** Solar Decathlon 2011, Department of Energy
 \$50,000 – Co-PI (PI: David Rockwood) – ~\$25,000 to D. Garmire for student and supplies
 Summer 2010 – Fall 2011
 One of 20 universities from around the world that made it as a finalist. The design stage was successfully completed and submitted to the Department of Energy resulting in an award of \$50,000 to the University of Hawaii. <http://www.solar.hawaii.edu>,
<http://www.youtube.com/watch?v=vzAQ3vQCU-s&feature=related>
 13. **Completed:** Renewable Energy for Island Sustainability, UHM internal funding, awarded by VC Gary Ostrander
 \$1,000,000 – Co-PI (PI: Anthony Kuh) – Investigator of the Green Holmes Hall Initiative (≈\$180K investment and testing of PV/turbines)
 Fall 2009 – Spring 2011
 This project ran for 2 years as seed funding to generate technology, research, training, and further proposals to other government agencies to help build Hawai`i's clean energy sector.
 14. **Completed:** Microscale Measurement of the Gravitational Constant, Penn State University
 \$24,018 – PI
 Fall 2009 – Spring 2010
 The intent of this project was to make microscale devices that can measure properties of the gravitational constant, one of the least well understood constants of nature. As a result of this research, seed funds are being sought to launch an experiment to take preliminary data.

PUBLICATIONS

Thesis

1. **D. Garmire**, “Methods and Devices for Optical and Electrical Metrology with Application to Phase-Shifting Interferometers, Torsional Microstructures, and Levitated Accelerometers.” UC Berkeley Thesis, UCB/EECS-2007-118, Sept. 20, 2007.
<http://www.eecs.berkeley.edu/Pubs/TechRpts/2007/EECS-2007-118.html>

Journal

2. [Submitted 4/3/2017, Accepted 7/31/2017] R. Ordonez, C. Hayashi, C. Torres, J. Melcher, N. Kamin, G. Severa, **D. Garmire**, Rapid Fabrication of Graphene Field-Effect Transistors with Liquid-metal Interconnects and Electrolytic Gate Dielectric, *Nature Scientific Reports*.
3. [featured on phys.org] Ordonez, R. C., C. K. Hayashi, C. M. Torres, N. Hafner, J. R. Adleman, N. M. Acosta, J. Melcher, N. M. Kamin, and **D. Garmire**. “Conformal Liquid-Metal Electrodes for Flexible Graphene Device Interconnects.” *IEEE Transactions on Electron Devices* 63, no. 10 (October 2016): 4018–23. doi:10.1109/TED.2016.2599879.
4. Hirano, J. and **D. Garmire** “Force Transducer through Total Internal Reflection and Frustrated Total Internal Reflection for a Three-Axis Anemometer.” *IEEE Sensors Journal* 15, no. 7 (July 2015): 3827–34.
5. Rockwood, D., N. Parks, and **D. Garmire**. "A continuously variable transmission for efficient urban transportation." *Sustainable Materials and Technologies* 1 (2014): 36-41.
6. Menor, M., T. Ching, X. Zhu, **D. Garmire**, and L. X. Garmire. "mirMark: a site-level and UTR-level classifier for miRNA target prediction." *Genome biology* 15, no. 10 (2014): 500.
7. Ordonez, R. C., C. Hayashi, N. Kamin, M. C. de Andrade, and **D. Garmire**. "Radio Frequency Detection with On-chip Graphene." *Naval Engineers Journal* 126, no. 4 (2014): 155-158.
8. Rockwood, D., and **D. Garmire**. “A New Transportation System for Efficient and Sustainable Cities: Development of a next Generation Variable Speed Moving Walkway.” *Sustainable Cities and Society* 14 (February 2015): 209–14. doi:10.1016/j.scs.2014.09.005.
9. Carland, J., M. Umeda, T. Wilkey, A. Oberbeck, J. Cumming, N. Parks, M. Fripp, A. Kuh, **D. Garmire** "Self-Sustaining Meteorological Wireless Sensor Networks," *Sensors and Transducers Journal*, Vol. 160, Issue 12, December 2013, pp. 118-124.
10. X. Zhang, A. S. Kim, **D. Garmire**, “Particle-train Dynamics in Curved Microfluidic Channels with Numerical Analysis” *Chemical Engineering Science (ISSN 0009-2509)*, Vol. 98, July 2013, pp. 69-76.
11. L. X. Garmire, **D. Garmire**, W. Huang, J. Yao, C. K. Glass, S. Subramaniam, “A global clustering approach to identify long intergenic non-coding RNA in mouse macrophages,” *PLoS ONE* 6(9): e24051, 2011. doi:10.1371/journal.pone.0024051
12. J. Hirano and **D. Garmire**, "Low Cost Three-Dimensional Anemometer for High Spatial Resolution Wind Profiling," *Sensors & Transducers Journal (ISSN 1726-5479)*, Vol.11, April 2011, pp. 43-55.
13. L. Joseph, T. Hasling, **D. Garmire**, “Vertically Aligned Carbon Nanotube Array (VANTA) Biosensor for MEMS Lab-on-a-Chip.” *Sensors & Transducers Journal*, Vol. 7, Oct. 2009, pp. 47-55.
14. L. X. Garmire, **D. Garmire**, C. A. Hunt, “An In Silico Transwell Device for the Study of Drug Transport and Drug-Drug Interactions.” *Pharmaceutical Research*, vol. 24, no. 12, 2007, pp. 2171-2186.
15. H. Choo, **D. Garmire**, J. Demmel, and R. S. Muller, “Simple Fabrication Process for Self-Aligned, High-Performance Microscanners; Demonstrated Use to Generate a Two-Dimensional Ablation Pattern.” *Journal of Microelectromechanical Systems*, vol. 16, no. 2, April 2007, pp. 260-268.

Conferences

16. A. Z. Trimble, W. A. Shiroma, **D. Garmire**, A. T. Ohta, "Multidisciplinary Vertically Integrated Project (VIP) Teams at the University of Hawaii: Challenges and Synergy," In the Proceedings of the 2016 Annual ASEE Conference & Expo, New Orleans, LA, 6/26-29/2016.
17. Ordonez, R., C., N. Kamin, J. Melcher, N. Acosta, and **D. Garmire**, "Graphene Photodetector Integrated with Liquid Metal (Galinstan) Ohmic Contacts" ASME InterPack/ICNMM 2015, July 6-9 2015, San Francisco, CA.
18. Rockwood, D., **D. Garmire**, D. Cook, and M. LeRoy, "Combined Solar Shading, Daylighting, and Wind Harvesting System," Energy Forum on Advanced Building Skins, 10/28-29/2014, Bressanone, Italy.
19. Ordonez, R.C., K. Norman, D. Jenkins, **D. Garmire**, "Investigation of Graphene-Based Coatings for Electroflotation Devices," Presented at Ag Innovation Showcase 2014, Honolulu, HI, 9/8-10/2014.
20. Ordonez, R.C., Hayashi, C., Kamin, N., de Andrade M.C., **Garmire, D.**, "Charge Amplification of a Graphene-integrated-CMOS (GIC) RF Detector. Nanotech Proceedings 2014." Vol 1, pp. 57-60. June 2014.
21. McNealy, T., Y. Li, **D. Garmire**, R. Kubato, D. M. Jenkins, "Nanoparticle Assisted Biofilm Disruption for Rapid Recovery and Detection of Bacterial Pathogens," In the Proceedings of IEEE Nano Electro Mechanical Systems (NEMS), Honolulu, HI, 4/13 – 4/16, 2014.
22. R. Ordonez, T. Robertson, C. Hayashi, J. Hirano, **D. Garmire**, "Reflectivity Modulation with Pentahedral Grids for Low-cost Thermal Management of Buildings" In the Proceedings of the 8th International Energy Forum, Bressanone, Italy, 11/5/2013 – 11/6/2013.
23. J. Hirano, **D. Garmire**, "Infrared Sensor Interference Isolation for use in Low-Cost Three-Dimensional Anemometers" Clean Technology Conference and Expo 2013, Washington DC, 5/12-26, 2013.
24. M. Umeda, N. Parks, A. Oberbeck, A. Kuh, D. Garmire, "Rapid Prototyping of Self-Sufficient Environmental Sensor Modules using Laser-Cut Parts" Clean Technology Conference and Expo 2013, Washington DC, 5/12-26, 2013.
25. J. Carland, A. Oberbeck, M. Umeda, T. Wilkey, M. Fripp, A. Kuh, **D. Garmire**, "Self-Sufficient Smart-Grid Sensor Nodes and Architecture" Clean Technology Conference and Expo 2013, Washington DC, 5/12-26, 2013.
26. R. Ordonez, C. Hayashi, N. Kamin, M. de Andrade, **D. Garmire**, "Exploring the Potential of On-chip Graphene," 3rd International Symposium on Terahertz Nanoscience, Honolulu, HI, 12/10-12/12, 2012.
27. W. Cai, J. Chan, **D. Garmire**, "3-Axis MEMS Hall-Effect Sensor" 2011 IEEE Sensors Applications Symposium, San Antonio, Texas, 2/22-2/24, 2011.
28. **D. Garmire**, D. Rockwood, W. Qu, H.-J. Park, "Chameleon Project - Intelligent Kinetic Skins for Sustainable Architecture in the Tropics," 5th Energy Forum, Bressanone, Italy, 12/2-12/3, 2010.
29. A. Kirk, C. Ho, **D. Garmire**, "Surface-Shape Capture with Boundary Electrodes," In the Proceedings of IEEE Sensors 2010 Conference, Hawaii, 11/1-11/4, 2010, pp. 1803-1808.
30. X. Zhang, A. T. Ohta, **D. Garmire**, "Rapid Monodisperse Microencapsulation of Single Cells," In the Proceedings of the 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'10), Buenos Aires, Argentina, 9/1-9/4, 2010.
31. J. Hirano, **D. Garmire**, "Low-cost 3D Wind Anemometers for Architectural Wind Modeling and Prediction," Clean Technology Conference and Expo 2010, Anaheim, CA, 6/21-6/24, 2010, pp. 175-178.
32. X. Song, E. L. Miller, **D. Garmire**, "Experimental study of solar spectrum impact on solar cells," Clean Technology Conference and Expo 2010, Anaheim, CA, 6/21-6/24, 2010, pp. 116-119.

33. L. X. Garmire, S. Subramaniam, **D. Garmire**, and C. K. Glass, "A Clustering Approach to Identify Intergenic Non-coding RNA in Mouse Macrophages," in Proceedings of the 2010 IEEE International Conference on Bioinformatics and Bioengineering, pp. 1-6, 2010.
34. L. Joseph, V. Veedu, **D. Garmire**, "Carbon Nanotube Array Sensor for MEMS Lab-on-a-chip," Nanotech 2008, The Technical Proceedings of the Nano Science and Technology Institute, Vol. 2, pp. 193-196, Houston, TX, 2009.
35. L. X. Garmire, **D. Garmire**, C. Benner, P. Ko, C. K. Glass, S. Subramaniam, "Peak-finding Refinement in the Chip-Seq Experiment," In the proceedings of ISCA CAINE-2008, Honolulu, HI, November 12-14, 2008.
36. R. Kant, **D. Garmire**, H. Choo, R. S. Muller, "Characterization of an Improved, Real-Time MEMS-Based Phase-Shifting Interferometer." In the Proceedings of IEEE/LEOS International Conference on Optical MEMS 2007 and Their Applications, August 2007. pp. 57-58.
37. **D. Garmire**, H. Choo, R. Kant, S. Govindjee, C. Séquin, R. S. Muller, J. Demmel, "Diamagnetically Levitated MEMS Accelerometers." In the Proceedings of Transducers, pp. 1203-1206, Lyon, France, June 10-14, 2007.
38. H. Choo, R. Kant, **D. Garmire**, J. Demmel, and R. S. Muller, "Fast, MEMS-Based, Phase-Shifting Interferometer." In the Proceedings of the Solid-State Sensor and Actuator Workshop, pp.94-95, Hilton Head, SC, June 4-8, 2006.
39. **D. Garmire**, H. Choo, R. S. Muller, S. Govindjee, and J. Demmel, "MEMS Process Characterization with an on-Chip Device." Nanotech 2006, The Technical Proceedings of the Nano Science and Technology Institute, Vol. 3, pp. 550-553, Boston, MA, May 2006.
40. **D. Garmire**, R. S. Muller, J. Demmel, "Vision-based Teleoperation of a Stroboscopic Microscopic Interferometric System for Remote Dynamic MEMS Testing." IEEE/LEOS International Conference on Optical MEMS 2005 and Their Applications, Technical Digest pp. 163-164, Oulu Finland, August 2005.
41. H. Choo, **D. Garmire**, J. Demmel, and R. S. Muller, "A Simple Process to Fabricate Self-Aligned High-Performance, Torsional Microscanners: Demonstrated Use in a Two-Dimensional Scanner." 2005 IEEE/LEOS International Conference on Optical MEMS and Their Applications, Technical Digest pp.21-2, Oulu, Finland, August 2005.
42. J. V. Clark, **D. Garmire**, M. Last, J. Demmel, "Practical Techniques for Measuring MEMS Properties." Nanotech 2004, The Technical Proceedings of the Nano Science and Technology Institute, Vol. 1, pp. 402-405, Boston, MA, March 2004.

INVENTIONS

Issued Patents

1. [<http://bit.ly/2wAZPRG>] R. Ordonez, N. Kamin, D. Garmire, C. Hayashi, "Graphene-based device with liquid metal contacts," US Patent 9704964B1, 2017.
2. [<http://bit.ly/2bd2yFT>] N. Kamin, M. de Andrade, **D. Garmire**, R. Ordonez, and C. Hayashi, "Capacitive-based graphene sensor," US Patent 8981346, 2015.
3. [<http://bit.ly/2bd23LO>] M. de Andrade, A. M. Leese de Escobar, **D. Garmire**, and N. Kamin, "Graphene based quantum detector device." US Patent 8963265, 2015.
4. [<http://bit.ly/2aNx4Fp>] **D. Garmire**, H. Choo, R. S. Muller, S. Govindjee, and J. Demmel, "Integrated MEMS Metrology Device using Complementary Measuring Combs." US Patent 8079246, 2011.
5. [<http://bit.ly/2aZpL0B>] H. Choo, **D. Garmire**, R. S. Muller, J. Demmel, "Method for Fabricating Vertically-Offset Interdigitated Comb Actuator Device." US Patent 7573022B2, 2009.
6. [<http://bit.ly/2b4bILM>] H. Choo, **D. Garmire**, J. Demmel, R. S. Muller, and R. Kant, "MEMS-Based Phase-Shifting Interferometer." US Patent 7564559, 2007.

STUDENTS

Graduate (Ph.D. students are in bold, graduated students are in italic)

- *Eric Saint Georges*, Ph.D., graduated 10/22/2010
- *Xiaoxiao Zhang*, Ph.D., graduated July 2011
Principal TD Integration Engineer, Global Foundries, NY
Featured on ABC KITV News Brief, "Cures in Capsules," Sept. 27, 2010.
<http://www.kitv.com/video/25189271/detail.html>
- *Luke Joseph*, MS, graduated 5/07/2010
CEO of own company, iFirst Med Tech
- *Soumya Vinod*, MS, graduated 10/1/2010
Received PhD at Rice University
Materials Scientist at Clarkson Aerospace, Inc.
- *Jeremy Chan*, MS, graduated 12/2011 (HSFL, SpaceX)
- *Reid Yamura*, MS, graduated 10/1/2011 (HSFL, Spawar)
- **John Hirano**, Ph.D. graduated July 2014
Engineering Department Chair, Director of Robotics at Saint Louis School
- *Justin Carland*, MS, graduated 12/2013
Teacher at KCC
- *Trent Robertson*, MS
Food and Drug Administration, Washington DC
- *Richard Phomsouvanh*, MS (Pelitron)
- *Hao Xu*, MS (Software Developer at Title Guaranty)
- Jordan Melcher, pursuing MS
- **Richard Ordonez**, graduated May 2017 (Navy/IfA)
- Noah Acosta, pursuing MS

COURSES TAUGHT

- EE211: Basic Circuit Analysis I – required by all electrical engineering students as well as other departments – content includes linear passive circuits, time domain analysis, transient and steady-state responses, phasors, impedance and admittance; power and energy, frequency responses, resonance.
- EE324: Physical Electronics – required by all electrical engineering students – content includes understanding band diagrams, Schrodinger’s equation, electron transport in crystal lattices mainly focusing on semiconductor devices, doping, ambipolar transport, carrier diffusion, PN junctions, transistor operation (MOSFET and BJT), and optical sensors and devices
- EE323/6: Microelectronics Circuits II – Undergraduate first and second semester courses on microelectronic circuits covering single-stage amplifiers, multi-stage amplifiers, differential amplifiers, feedback circuits, 741, logic circuits, ADC/DAC approaches, noise, some power electronics
- EE626: Rapid Prototyping – introduced by D. Garmire – covers 3D printing, laser cutting, and printed circuit board manufacturing as well as principles behind rapid prototyping, agile management, and some essential entrepreneurship
- EE693I: Microtechnology for Renewable Energies – Developed a new graduate course covering topics on where microtechnology is used in renewable energy. Topics included fuel cell technology, vibrational energy harvesting, photovoltaics, thermal energy harvesting.
- EE624: Microsensors and Microactuators – Graduate course on microfabrication, simulation and modeling, and design paradigms of microelectromechanical systems. Discussion of domains and coupling of domains: fluidic, chemical, thermal, kinetic, elastic, magnetic, and electric.

PROFESSIONAL SERVICE

1. NSF Panelist
2. Reviewer
 - Transactions on Terahertz Science and Technology, 2013 – now*
 - IEEE Sensors, 2012 – now*
 - Advances in Optoelectronics, 2011*
 - Journal of Microelectromechanical Systems, 2010*
 - Elsevier Mechatronics, 2009*
 - IEEE Transactions on Electron Devices, 2008 and 2009*
3. Department Personnel Committee, Fall 2017—now
4. Faculty Search Committee Chair, Department of Electrical Engineering, UHM, Spring 2017
5. Office of the Vice Chancellor for Research [OVCR] Research Advisory Council [RAC], Fall 2015 – present
6. Session Organizer, Topic Chair, MEMS Fabrication and Packaging, Emerging Frontiers, ASME InterPack/ICNMM 2015, San Francisco CA, July 6-9, 2015
7. Chair of Micro/nanofluidics and Point-of-Care Systems, MANCEF COMS (Commercialization of Micro/nano Systems) Conference, Greensboro NC, Aug. 29-Sep. 2, 2011
8. U.S. Department of Energy (DOE) Solar Energy Technologies Program Workshop, 2/10/2011
 - Invited to contribute transformational ideas for reducing Balance of Systems costs
9. ABET Committee, Fall 2008 – Spring 2011
 - Responsible for assembling EE 496 projects, revising the self-study report, attending the ABET review for lab and faculty interview
 - Fall 2009 review indicated there were no program weaknesses.
10. UH Fabrication Laboratory, Spring 2008 – now
 - Responsible for an \$80K renovation of the laboratory that has successfully completed

11. POST Cleanroom, Fall 2009 – now
 - Working with Hawaii Space Flight Lab (HSFL) faculty in organizing the usage of the cleanroom facility
12. Faculty Senator, Fall 2009 – Fall 2010
 - Subcommittee on Research, Fall 2009 – Fall 2010
 - Responsible for drafting new resolution on evaluation of research for promotion and tenure
13. SEC, Fall 2009 – Spring 2009
 - Committee reports faculty concerns and consensus to the Dean of the College of Engineering on his policies and plans for the future
14. Graduate Admissions, Spring 2009 (for the Fall 2009 entering class)

CERTIFICATION

UH Laboratory Certification, UH Hazardous Waste Certification, UH Biosafety Certification
Management of Technology Certificate (Berkeley), May 2007