Eric Gilbertson

gilberte@seattleu.edu • Seattle, WA • (859) 358-7648

Education

- **Massachusetts Institute of Technology** — **Cambridge, MA**
  Doctor of Philosophy (Ph.D.) in Mechanical Engineering. Advisor: Dr. Franz Hover — *2010 – 2014*
  - Thesis: "Describing Functions for Information Channels Subject to Packet Loss and Quantization."
  - Concentration: Controls. Minor: Mechanical Design.

  Master of Science in Mechanical Engineering. Advisor: Dr. Franz Hover — *2008 – 2010*
  - Thesis: "Gas Lift Failure Mode Analysis and the Design of a Thermally-Actuated Gas Lift Safety Valve."

  Bachelor of Science in Mechanical Engineering, Mathematics Minor. — *2004 – 2008*

Teaching and Work Experience

- **Seattle University** — **Seattle**
  Instructor — *2018-2021*
  - Taught undergraduate Statics, Dynamics, Dynamic Systems, Advanced Controls, Integrated Design, and graduate Advanced Dynamics. Advised multiple senior design project teams.
- **Seattle University** — **Seattle**
  Lecturer — *2017-2018*
  - Taught undergraduate Trigonometry, Advanced Controls Systems, Dynamics, and Dynamic Systems. Advised a senior design project and an undergraduate research project.
- **Dulwich College International** — **Seattle**
  Content Developer — *2018*
  - Developed course materials and recorded lectures for highschool-level laboratory physics classes.
- **The Seattle Colleges** — **Seattle**
  Lecturer — *2016-2018*
  - Taught undergraduate classes in Math for Engineers, Math for Automechanics, Precalculus, Calculus I,II, III.
  - Taught Probability and a laboratory-based Physics class for Danish high school students.
  - Taught Trigonometry for Bridge to Prosperity Program for at-risk youth.
- **MIT-Skoltech Program** — **MIT**
  Lecturer — *2015*
  - Developed and taught the class "Design of Precision Machines" for graduate students at the Skolkovo Institute of Science and Technology in Moscow, Russia, through the MIT-Skoltech program.
- **MIT Hover Research Group - Autonomous Underwater Vehicle Control** — **MIT**
  Graduate Research Assistant — *2012 – 2014*
  - Developed a control strategy that can be used on systems such as marine robots that rely on lossy acoustic communication. Tested strategy on robotic kayaks in Charles River, Boston and in Boston Harbor. Work funded by Office of Naval Research.
- **MIT Hover Research Group - Gas Lift Safety Valve Design** — **MIT**
  Graduate Research Assistant — *2009 – 2011*
  - Designed, prototyped, and tested a novel thermally-actuated safety valve for subsea oil wells, in collaboration with Chevron.
  - 4 patents awarded, 3 refereed conference papers and 1 journal paper published on project.
- **NASA Jet Propulsion Laboratory** — **Pasadena, CA**
  Mechanical Engineering Intern — *2007*
  - Worked with team of students and NASA engineers to design the Mars Student Climate Lander, a probe designed to be sent to Mars to collect climate data.

Awards and Honors

- Fastest Known Time of the Year (FKTOY) 3rd place award for Rocky Mountain Slam (2020)
- DeFlorez Award in MIT Graduate Engineering Design for gas lift safety valve (2011)
- Finalist for Science, Mathematics, and Research for Transformation (SMART) Fellowship (2009).
- Awarded Kentucky Colonel honor for Hurricane Katrina relief work (2008).

Publications on next page →

Other Skills

- **Software**: MATLAB, SolidWorks, Labview, LaTeX, Microsoft Office, HTML.
- **Fabrication skills**: CAD/CAM, lathe, mill, hand tools, soldering, GD&T.
- Conversational in Spanish.
- Served as president and member of the board of directors of the MIT Outing Club (>1500 members)(2007-2014).
- World-record-holding juggler.
- Have completed 25 mountaineering first ascents, documented in the American Alpine Journal (2015-2017)

Issued Patents (4)

- **Gilbertson, E.**, Hover, F., Freeman, B., and Arellano, J., "Sharp Phase Change Shape Memory Alloy Thermal Actuator," US Patent No **9638343 B2**, issue date May 2, 2017.
- Yu, C., **Gilbertson, E.**, and Hover, F., "Gas-Lift Safety Valve Actuated by a Sensor," US Patent Application No **9284825**, issue date March 15, 2016
- **Gilbertson, E.**, Yu, C., and Hover, F., "Apparatus for Adjusting Shape Memory Alloy Transition Temperatures to Track Slowly Changing Ambient Temperature," US Patent No **9145974**, issue date Sept 29, 2015.
- **Gilbertson, E.** and Hover, F., "Thermally-Actuated Gas Lift Safety Valve," US Patent No **8,800,590 B2**, issue date Aug 12, 2014.

Selected Publications

- **Gilbertson, E.**, Hover, F., "Describing Functions for Scalar Information Channels Subject to Packet Loss and Quantization," Journal of Dynamic Systems, Measurement, and Control, 1 July 2015.
- **Gilbertson, E.**, Describing Functions for Information Channels Subject to Packet Loss and Quantization, Ph.D. Thesis, Massachusetts Institute of Technology, 2014.
- **Gilbertson, E.**, Hover, F., "Limit Cycling in Control of Underwater Vehicles Caused by Lossy Quantized Communication Channels," International Symposium on Unmanned Untethered Submersible Technology (UUST), Portsmouth, NH, USA, Aug 2013.
- **Gilbertson, E.**, Reed, B., Leighton, J., Cheung, M., Hover, F., "Experiments in Dynamic Control of Autonomous Marine Vehicles Using Acoustic Modems," International Conference on Robotics and Automation (ICRA), Karlsruhe, Germany, May 2013.
- **Gilbertson, E.**, F., Hover, and B. Freeman, "A Thermally-Actuated Gas Lift Safety Valve," *SPE Production and Operations*, 28, no. 01 (2013): 77-84.
- **Gilbertson, E.** and Hover, F., "AC Transmission System Planning on Large Scale and Realistic Systems," IEEE PES International Conference on Power Systems Technology Powercon, Auckland, New Zealand Oct-Nov 2012.
- **Gilbertson, E.**, F. Hover, and B. Freeman, "Sharp Phase Change in Shape Memory Alloy Thermal Actuators for Subsea Flow Control," ASME International Conference on Offshore Mechanics and Artic Engineering (OMAE), Rio de Janiero, Brazil, July 2012.
- **Gilbertson, E.**, F. Hover, J. Arellano, and B. Freeman, "Design of a Thermally-Actuated Gas Lift Safety Valve," ASME International Conference on Offshore Mechanics and Arctic Engineering (OMAE), Rotterdam, Netherlands, June 2011.
- **Gilbertson, E.**, Gas Lift Valve Failure Mode Analysis and the Design of a Thermally-Actuated Positive-Locking Safety Valve, Masters Thesis, Massachusetts Institute of Technology, 2010.
- **Gilbertson, E.**, F. Hover, and E. Colina, "Failure Mode and Sensitivity Analysis of Gas Lift Valves," 29th International Conference on Ocean, Offshore, and Arctic Engineering (OMAE), Shanghai, China, June 2010.
- Kelley L. C., **Gilbertson, E.** Sheikh, A., Eppinger, S., and Dubowsky, S., "On the Feasibility of Solar Powered Irrigation," Journal of Renewable and Sustainable Energy Reviews, 14 December 2010, 2669-2682.