

Mark Cutler

Curriculum Vitae

Education

- 2012–2015 **PhD**, *Massachusetts Institute of Technology*, Cambridge, GPA – 4.7/5.0.
PhD in Robotics
- 2010–2012 **MS**, *Massachusetts Institute of Technology*, Cambridge, GPA – 4.7/5.0.
Masters in Aeronautical and Astronautical Engineering
- 2004–2005, 2007–2010 **BS**, *Brigham Young University*, Provo, UT, GPA – 3.99/4.0.
Bachelors in Mechanical Engineering

Dissertation

- Title *Practical Robot Reinforcement Learning through Efficient Simulator Sampling*
- Committee Jonathan P. How (chair), Leslie Kaelbling, Andrea Censi
- Description Designing efficient algorithms for decision making under uncertainty for autonomous systems. Efficiency comes by properly incorporating possibly inaccurate simulations of system to be controlled.

Masters Thesis

- Title *Design and Control of an Autonomous Variable-Pitch Quadrotor Helicopter*
- Advisor Jonathan P. How
- Description Designed, built, and programmed a novel autonomous multi-rotor helicopter capable of agile, aggressive, and aerobatic flight. Developed new flight control algorithms and autopilot hardware for the vehicle control.

Experience

Vocational

- 2008–2010 **Undergraduate Research Assistant**, BRIGHAM YOUNG UNIVERSITY, Provo, UT.
- Wrote wind estimation algorithms for small unmanned air-vehicles (UAVs)
 - Developed atmospheric energy harvesting techniques for small UAVs to enhance their flight time, range, and mission capabilities
 - Designed and built a three axis robot capable of mapping insect flapping patterns

- 2010–2010 **Mechanical Design Engineer**, SPOTTERRF, Orem, UT.
- Developed new heat management techniques for small radar devices resulting in a significant high-temperature performance improvement
 - Designed a new carbon-fiber case for the radar encasement
- 2009–2009 **Mechanical Design Engineer**, L-3 COMMUNICATIONS, Salt Lake City, UT.
- Designed demo platform for new modem integration into mobile communication ground station
 - Performed thermal, structural, weight, and power analyses to optimize data link and modem case designs
- 2008–2008 **Advanced Machine Design Engineer**, CORNING INC., Corning, NY.
- Researched and tested method that reduced tool run-out by 55% in contouring mills
 - Designed mechanism enabling the cutting of ceramic extrusions to be performed by one person instead of two
- Volunteer**
- 2005–2007 **Volunteer Representative**, *The Church of Jesus Christ of Latter-day Saints*, Rostov, Russia.
- Provided leadership, development and training for 16 volunteer representatives
 - Oversaw volunteer operations in a geographical area covering over 300 miles
 - Developed leadership, teaching, personal and communication skills

Awards

- 2010–2015 National Science Foundation Graduate Fellow
- 2010–2011 Aurora Flight Sciences Fellow
- 2004–2010 Robert C. Byrd Honors Scholarship

Technical Highlights

- Languages C/C++, PYTHON, MATLAB, L^AT_EX, basic JAVA, HTML, and CSS
- Tools ROS, Git, SVN, SolidWorks
- Hardware Embedded microcontroller development (Microchip and TI), Circuit design (2- and 4-layer boards), Soldering (including SMD leadless components), Basic machining (mill, lathe, 3D printing)
- Professional Activities Paper reviewer for the International Journal of Robotics Research, IEEE Transactions on Automation Science and Engineering, IEEE Transactions on Control Systems Technology, IEEE Control Systems Magazine, ASME Journal of Dynamic Systems, Measurement and Control, Automatica, Robotics: Science and Systems, IEEE International Conference on Robotics and Automation, IEEE International Conference on Intelligent Robots and Systems, IEEE Conference on Decision and Control, American Control Conference, International Conference on Unmanned Aircraft Systems, European Control Conference, and IFAC Symposium on Automatic Control in Aerospace.

Publications

Interests

- My Kids
- Electronics
- Skiing
- Robots
- Racquet Sports
- Ultimate Frisbee

Updated March 2, 2015