

Robin L. H. Deits

CONTACT INFORMATION	19 Upland Rd. Cambridge, MA 02140 USA	Voice: (517) 325-3463 Email: robin.deits@gmail.com
EDUCATION	Massachusetts Institute of Technology: Ph.D. Candidate Department of Computer Science, Robot Locomotion Group. MIT: S.B. Physics Concentrated in Robotics. Relevant coursework included: <ul style="list-style-type: none">• CS: AI, Computation Structures, EECS I & II, Robotics: Science & Systems• EE: Power Electronics Laboratory, Microcomputer Project Laboratory• MechEng: Mechanical Engineering Tools, Dynamics & Controls I	Sept. 2012 to Present June, 2011: GPA: 4.9/5.0
HONORS	Hertz Foundation Graduate Fellowship MIT-Schlumberger Energy Initiative Fellowship MIT Prince Edward Fellowship Phi Beta Kappa Honors Society, Xi Chapter Sigma Pi Sigma Physics Honors Society	2011 2012 2012 2011 2011
EXPERIENCE	Engineering Consulting <i>Subcontracted by Battelle Memorial Institute</i> Consulted on a variety of interdisciplinary projects: <ul style="list-style-type: none">• Developed a software system for tracking the digging kinematics of a live razor clam for the MIT RoboClam project• Produced a software package for gait control for a novel walking robot• Conducted experiments and analyzed data to develop a natural language system for human-robot interaction MIT, Department of EECS, Lab For Electromagnetic and Electronic Systems <i>Power Electronics and Microcomputer Lab Assistant</i> Assisted in teaching the laboratory component of 6.115: Microcomputer Project Lab and 6.131: Power Electronics Lab. Gained expertise designing and debugging systems ranging from power electronics to C and assembly code. <i>Undergraduate Researcher</i> Developed an HTML and JavaScript interface for interacting with data from the NILM power consumption management system. MIT, Department of Mechanical Engineering, Hatsopolous Microfluids Lab <i>Undergraduate Researcher</i> Worked on the MIT RoboClam project sponsored by Bluefin Robotics and Battelle to design an efficient, biologically inspired burrowing mechanism <ul style="list-style-type: none">• Designed and wrote a genetic algorithm to optimize the robot's control parameters• Wrote control and data acquisition software for the robot• Performed analysis of the efficiency and energy consumption of the system• Ran tests of the robot in the lab and in the field Siemens Dynamowerk, Berlin, Germany <i>Intern</i> Implemented an optimization system in MATLAB and achieved significant improvements in expected performance of magnetic bearing systems. Work resulted in a patent, granted in June 2012.	September 2011 to August 2012 September 2010 to May 2011 November 2010 to February 2011 January 2009 to December 2010 June to August 2010

Mazemakers, Wellesley, MA

Senior Counselor

June to August 2008 & 2009

Designed and taught lessons on a variety of subjects, including Robotics, Video Game Design, and Science.

- Introduced children as young as 8 to basic concepts of programming and engineering
- Developed course plans, activities, and demonstrations for science, photography, game design, art, and robotics classes.

SKILLS

Computer Science:

- Controls, data analysis, and optimization in MATLAB, Python, and LABVIEW
- Additional programming experience in C, Intel 8051 assembly, Java, and JavaScript
- Data acquisition using National Instruments DAQ hardware and software
- Design and implementation of genetic algorithms and neural networks
- Software including Windows/MacOS/Linux, MS Office, L^AT_EX, Eclipse, Vim

Electrical Engineering:

- Power electronics circuits, including buck/boost converters, transformers, and rectifiers.
- Analog and digital electronic systems, including Intel, Pic, and Atmel microcontrollers

Mechanical Engineering:

- Mechanical design using Solidworks CAD software
- Machine tools including the lathe, milling machine, and CNC mill

PUBLICATIONS

- [1] R. L. H. Deits and M. Lang, "Radial Magnetic Bearing for Magnetic Support of a Rotor," Patent. [Online]. Available: <http://www.freepatentsonline.com/20130293051.pdf>
- [2] A. G. Winter, R. L. H. Deits, and D. S. Dorsch, "Critical Timescales for Burrowing in Undersea Substrates via Localized Fluidization, Demonstrated by RoboClam: a Robot Inspired by Atlantic Razor Clams," in *ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Portland, OR, Aug. 2013. [Online]. Available: http://gear.mit.edu/Publications/RoboClam/2013_RoboClam_ASME_IDETC_Final.pdf
- [3] R. L. H. Deits, S. Tellex, P. Thaker, D. Simeonov, T. Kollar, and N. Roy, "Clarifying Commands with Information-Theoretic Human-Robot Dialog," *Journal of Human-Robot Interaction*, vol. 2, no. 2, pp. 58–79, 2013. [Online]. Available: <http://humanrobotinteraction.org/journal/index.php/HRI/article/view/112>
- [4] S. Tellex, P. Thaker, R. L. H. Deits, D. Simeonov, T. Kollar, and N. Roy, "Toward Information Theoretic Human-Robot Dialog," in *Robotics: Science and Systems Conference*, 2012. [Online]. Available: <http://www.roboticsproceedings.org/rss08/p52.pdf>
- [5] M. Lang and R. L. H. Deits, "Radial Magnetic Bearing for the Magnetic Bearing of a Rotor," Patent, 2012. [Online]. Available: <http://patentscope.wipo.int/search/en/WO2012084590>
- [6] A. G. Winter, R. L. H. Deits, and A. E. Hosoi, "Localized fluidization burrowing mechanics of Ensis directus," *Journal of Experimental Biology*, vol. 215, no. 12, pp. 2072–2080, 2012. [Online]. Available: <http://jeb.biologists.org/cgi/doi/10.1242/jeb.058172>
- [7] A. G. Winter, R. L. H. Deits, D. S. Dorsch, A. E. Hosoi, and A. H. Slocum, "Teaching RoboClam to Dig: The design, testing, and genetic algorithm optimization of a biomimetic robot," in *International Conference on Intelligent Robots and Systems (IROS), 2010 IEEE/RSJ*. IEEE, 2010, pp. 4231–4235. [Online]. Available: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5654364
- [8] A. G. Winter, R. L. H. Deits, D. S. Dorsch, and A. E. Hosoi, "Multi-Substrate Burrowing Performance and Constitutive Modeling of RoboClam: A Biomimetic Robot Based on Razor

Clams,” in *ASME 2010 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Montreal, Quebec, Aug. 2010. [Online]. Available: <http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=5654364>

- [9] A. G. Winter, A. E. Hosoi, A. H. Slocum, and R. L. H. Deits, “The Design and Testing of RoboClam: A Machine Used to Investigate and Optimize Razor Clam-Inspired Burrowing Mechanisms for Engineering Applications,” in *ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2009*, Aug. 2009, pp. 1–6.