

Robin L. H. Deits

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INFORMATION Cambridge, MA 02139 USA Email: robin.deits@gmail.com

EDUCATION **Massachusetts Institute of Technology: S.B. Physics, June 2011** GPA: 4.9/5.0

Concentrated in Robotics. Relevant coursework included:

- **CS:** AI, Computation Structures, EECS I & II, Robotics: Science & Systems
- **EE:** Power Electronics Laboratory, Microcomputer Project Laboratory
- **MechEng:** Mechanical Engineering Tools, Dynamics & Controls I

HONORS **Hertz Foundation Graduate Fellowship Recipient** 2011
MIT-Schlumberger Energy Initiative Fellowship Recipient 2012
Phi Beta Kappa Honors Society, Xi Chapter May 2011 to Present
Sigma Pi Sigma Physics Honors Society May 2011 to Present

EXPERIENCE **Engineering Consulting**

Subcontracted by Battelle Memorial Institute September 2011 to Present

Consulted on a variety of interdisciplinary projects:

- 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

Power Electronics and Microcomputer Lab Assistant September 2010 to May 2011

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.

MIT, Department of EECS, Lab For Electromagnetic and Electronic Systems

Undergraduate Researcher November 2010 to February 2011

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

Undergraduate Researcher January 2009 to December 2010

Worked on the MIT RoboClam project sponsored by Bluefin Robotics and Battelle to design an efficient, biologically inspired burrowing mechanism

- 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

Intern June to August 2010

Implemented an optimization system in MATLAB and achieved significant improvements in expected performance of magnetic bearing systems.

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] 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>
- [2] M. Lang and R. L. H. Deits, "Radial Magnetic Bearing for the Magnetic Bearing of a Rotor," 2012. [Online]. Available: <http://patentscope.wipo.int/search/en/WO2012084590>
- [3] 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, May 2012. [Online]. Available: <http://jeb.biologists.org/cgi/doi/10.1242/jeb.058172>
- [4] 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*, no. 617. IEEE, 2010, pp. 4231–4235. [Online]. Available: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5654364
- [5] 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*, Oct. 2010. [Online]. Available: <http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=5654364>
- [6] 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.