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 **Sept. 2012 to Present**

Department of Computer Science, Robot Locomotion Group.

MIT: 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 August 2012**

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, Lab For Electromagnetic and Electronic Systems

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.

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. Work resulted in a patent, granted in June 2012.

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, LaTeX, 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 sofware
- 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.