

## Amy L. Orsborn

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### **Education**

**UC Berkeley/UCSF**, Berkeley, CA/San Francisco, CA  
Ph.D., Joint Graduate Group in Bioengineering  
September 2007 – present

**Case Western Reserve University**, Cleveland, OH  
B.S., Engineering Physics  
May 2007, *summa cum laude*

### **Research Interests**

Motor control  
Brain-machine interfaces  
Sensorimotor integration

### **Research**

**Department of Electrical Engineering**—UC Berkeley, Berkeley, CA

Advisor: Jose Carmena

*Graduate Student: July 2008 – Present*

- Investigating neural correlates of movement dynamics (e.g. limb stiffness) in primary motor and dorsal premotor cortices
- Exploring the inclusion of limb dynamics into brain-machine interfaces

**Keck Center for Integrative Neuroscience**—UCSF, San Francisco, CA

Advisor: Philip Sabes

*Rotation Student: April 2008 – July 2008*

- Studied the interplay between adaptation and sensory integration in human reaching using prism shifts and psychophysics

**Biomagnetic Imaging Laboratory**—UCSF, San Francisco, CA

Advisor: Srikantan Nagarajan

*Rotation Student: January 2008 – April 2008*

- Conducted speech motor control studies using MEG imaging during the application of pitch and formant perturbations
- Investigated machine learning methods for source localization in MEG/EEG

**Department of Biomedical Engineering**—Case Western Reserve U., Cleveland OH

Advisor: Robert Kirsch

*Engineering Physics senior project: August 2006 – May 2007*

- Developed a simulation of the mechanical and control-response properties of an above-elbow myoelectric prosthetic arm using Matlab and Simulink

**Department of Biomedical Engineering**—Boston University, Boston, MA

Advisor: James Collins

*Research Experience for Undergraduates participant: June 2006 – August 2006*

- Tested the effects of vibrations applied to soles of the feet on gait stability in young, healthy subjects using foot-switch gait analysis methods
- Assisted in development and implementation of a Matlab-based analysis program used for quantification of gait stability

### ***Teaching Experience***

**Department of Material Science**—Case Western Reserve University, Cleveland, OH

*Teaching Assistant, Chemistry of Materials: January 2007 – May 2007*

- Held a weekly recitation section (~35 students) to review material and give quizzes
- Graded weekly homework assignments and quizzes, and midterm exams

**Department of Physics**—Case Western Reserve University, Cleveland, OH

*Course Grader, Introduction to Electromagnetism: August 2004 – December 2004*

- Graded students' weekly homework (~50 students), and checked solutions
- Informed students of progress and common mistakes each week

### ***Publications***

#### **Refereed Conference Proceedings**

- R. Héliot, **A. Orsborn** and J.M. Carmena, “Stiffness control of 2-DOF exoskeleton for brain-machine interfaces”. 2nd IEEE RAS / EMBS International Conference on Biomedical Robotics and Biomechanics, Scottsdale (AZ), October 2008.

#### **Journal Papers**

- K. Ganguly, L. Secundo, G. Ranade, **A. Orsborn**, E. Chang, D. Dimitrov, J.D. Wallis, N.M. Barbaro, R.T. Knight, J.M. Carmena. (2009) Cortical representation of ipsilateral arm movements in monkey and man. *Journal of Neuroscience*, 29(41).

### ***Presentations***

**A. Orsborn** and J.M. Carmena, “Neural correlates of dynamic limb stiffness modulation in an accuracy constraint task,” Society for Neuroscience annual meeting, Chicago, IL, October 2009 (poster)

**A. Orsborn** and R. Kirsch. “Simulation of an Above-Elbow Myoelectric Prosthetic Arm for Development of an Implanted Myoelectric Control System.” SOURCE Annual Symposium for Undergraduate Research, Case Western Reserve University, Cleveland, OH. April 2007 (poster)

**A. Orsborn**, A. Galica, I. Lupascu, J. Collins, and A. Priplata.. “Noise-Enhanced Gait Stability: A Study of Healthy Subjects.” Research ShowCASE Annual Symposium, Case Western Reserve University, Cleveland OH. April 2007 (poster)

***Awards***

National Science Foundation Graduate Research Fellowship, 2008  
Outstanding Senior in Engineering Physics, 2007  
Krumhansle Family Prize for Outstanding Achievement in Physics, 2006 and 2007  
Tau Beta Pi, 2005  
Fiat Awards Program Scholarship, 2004 and 2008  
Case Western Reserve University Provost Scholarship, 2003 – 2007

***Other Activities***

Bioengineering Association of Students peer advising committee, 2008 – 2009  
Bioengineering Joint Graduate Group admissions committee student member, 2008 – 2009  
WRUW radio programmer and assistant music director, 2004 – 2007  
Muscular Dystrophy Association summer camp counselor, 2002 – 2005

***Technical Skills***

**Programming:** Matlab, C++  
**Platforms:** Unix, Windows