

David Isaac Grow

CONTACT INFORMATION

Haptic Exploration Laboratory
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RESEARCH INTERESTS

Rehabilitative robotics, haptics, biomedical engineering, neuroscience

EDUCATION

Doctor of Philosophy, Mechanical Engineering, Johns Hopkins University, Baltimore, MD

- Field of Research: Rehabilitative Robotics and Motor Control
- Advisor: Dr. Allison Okamura
- Anticipated Completion Date: May 2010

Master of Science, Mechanical Engineering, University of Utah, Salt Lake City, UT

- Field of Research: Haptics and Virtual Reality
- Advisor: Dr. John Hollerbach
- Grade Point Average: 3.81
- Completed: December 2006

Honors Bachelor of Science, Physics, University of Utah, Salt Lake City, UT

- Field of Research: Thermoacoustics
- Advisor: Dr. Orest Symko
- Grade Point Average: 3.48
- Completed: August 2004

HONORS AND AWARDS

Sigma Pi Sigma National Honor Society, 2004
Departmental Outstanding Undergraduate Research Award, 2004
Departmental Outstanding Teaching Assistant Award, 2004
University of Utah Annual Autonomous Robot Competition: First Place, 2004
University of Utah Undergraduate Research Fellowship, 2003
Society of Physics Students: President (received Outstanding Chapter Award), 2003

RESEARCH EXPERIENCE

Rehabilitative Robotics **August 2006 - present**
Currently developing a comprehensive model of human motor control and arm dynamics to investigate cerebellar ataxia. With a better understanding of their pathologic motor function, we then aim to design a robotic exoskeleton to rehabilitate and/or assist ataxic individuals.

Locomotion Interfaces for Virtual Environments **May 2004 - August 2006**
Expanded the Sarcos Treadport through the design of a mechanism-based harness for torso haptics. Extended the Treadport's force feedback capability to 2-D

Center for Acoustic Cooling Technology **September 2001 - May 2004**
Designed thermoacoustic prime movers and refrigerators. Investigated the effects of working-gas pressurization on cooling efficiency.

TEACHING
EXPERIENCE

Haptic Systems for Teleoperation and Virtual Reality September 06 - present
Teaching Assistant. Guiding students through semester length projects in haptics and related fields, hold office hours, and grade assignments.

Statics and Strength of Materials September 2004 - December 2004
Teaching Assistant. Gave one lecture, held office hours, helped prepare exams.

Physics for Scientists September 2003 - May 2004
Teaching Assistant. Led a weekly discussion section, held office hours, helped prepare exams.

Physics of Audio and Video January 2003 - May 2004
Laboratory Assistant. Prepared and conducted laboratory exercises on complex waves and Fourier analysis, loudspeakers, frequency response of audio systems, radio broadcasting, and magnetic and digital recording.

Physics, Astronomy, Differential Equations September 2002 - December 2003
Individual and Group Tutor. Prepared and presented supplemental instruction, clarified course material, led review sessions before exams.

PUBLICATIONS

D. Grow, L. N. Verner, and A. M. Okamura. *Educational Haptics.* Submitted to the AAAI Spring Symposium Series. Under review.

D. Grow. *Harness Design for Two-Axis Torso Haptics.* Masters Thesis, University of Utah, December 2006.

D. Grow and J. M. Hollerbach. *Harness Design for Two-Axis Torso Haptics.* In Proceedings IEEE Haptic Symposium 2006, pages 83-87, March 2006.

J. M. Hollerbach, D. Grow, and C. R. Parker. *Developments in Locomotion Interfaces.* In Proceedings IEEE International Conference on Rehabilitative Robotics, July 2005.

D. Grow. *Pressurization of Thermoacoustic Refrigerators.* Bachelors Honors Thesis, University of Utah, August 2004.

D. Grow. *Experiments on the Effects of Pressurization of a Thermoacoustic Refrigerator.* University of Utah UROP Research Abstracts, 4: Spring 2004.

CONFERENCE
PRESENTATIONS

Harness Design for Two-Axis Torso Haptics. IEEE VR2006, Washington D.C., March 2006.

Recent Advances in Torso Haptics for Virtual Environments. ITR Summit Meeting, University of Utah, July 2005.