

Dane Powell

☎ 713-348-2300
✉ danep@rice.edu



Note that some parts of this document (e.g. GPA and contact information) have been redacted for web publication

Education

- May 2008– Present **M.S./Ph.D. (expected)**, *Rice University*, Houston, TX, — GPA.
Mechatronics and Haptic Interfaces Lab
- Aug 2003– May 2008 **B.S. Mechanical Engineering**, *Rice University*, Houston, TX, — GPA.
Specialization in robotics, system dynamics and control. President’s Honor Roll.
- Aug 2006– Dec 2006 **Study Abroad**, *Queen Mary, University of London*, London, UK, — GPA.

Master’s Thesis (in progress)

- title *Shared-control Guidance Paradigms for Robot-mediated Skill Transfer*
- advisor Dr. Marcia K. O’Malley
- description Many dynamic tasks have a clearly defined optimal trajectory or strategy for completion. Human operators may discover this strategy naturally through practice, but actively teaching it to them will increase their rate of performance improvement. Haptic devices, which provide force feedback to an operator, can physically guide participants through the optimal completion of a task, but this alone does not ensure that they will learn the optimal control strategy. In fact, participants may become dependent on this guidance to complete the task. This research focuses on developing and testing ways in which guidance can be modulated such that it conveys the proper task completion strategy without physically dominating the operator and thus encouraging dependency. These guidance schemes may also be applied to the real-time execution of tasks in order to convey computer-generated task completion strategies to a user without allowing the computer to physically dominate control of the task.

Publications

- Ozkan Celik, Dane Powell, and Marcia K. O’Malley. Impact of visual error augmentation methods on task performance and motor adaptation. In *IEEE 11th International Conference on Rehabilitation Robotics (ICORR 2009)*, pages 793–798, 2009.
- Dane Powell and Marcia K. O’Malley. Co-presentation of force cues for skill transfer via shared-control systems. In *16th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS)*, 2010.

Research

- Aug 2008– Present **Shared Control for Robot-mediated Skill Transfer**, *MAHI Lab*.

- Dec 2008–
June 2009 **Laptics: A Low-cost Haptic Laparoscopic Surgical Simulator**, *MAHI Lab*.
- Jan 2008–
Jan 2009 **Robot-assisted Rehabilitation for CIMT**, *MAHI Lab in collaboration with BCM*.
- Jan 2008–
Jan 2009 **Automation for Electron Cryomicroscopy**, *MAHI Lab in collaboration with BCM*.
- Aug 2008–
Dec 2008 **Impact of Visual Error Augmentation Methods on Task Performance and Motor Adaptation**, *MAHI Lab*.
- Aug 2007–
May 2008 **Thermal Energy Storage System**, *Rice University Senior Design*.

Vocational Experience

- May 2008–
Present **Graduate Research Assistant**, *Rice University Department of Mechanical Engineering and Materials Science*, Houston, TX.
- Aug 2009–
Present **Presentation Coach**, *Rice University School of Engineering*, Houston, TX.
- Jun 2007–
Present **Web Developer**, *FDAISO.com*, Houston, TX.
- May 2007–
Aug 2007 **Engineering Consultant**, *Nimbic Systems*, Houston, TX.
Developed a patent-pending surgical site isolation device; designed and executed a research study into operating room air quality
- Jan 2007–
May 2007 **Teaching Assistant**, *Rice University*, Houston, TX.
Instructed and graded for an upper-level mechanical engineering lab
- May 2004–
Aug 2006 **Banker, CSR, Sales Specialist**, *REI (Recreational Equipment, Inc)*, Austin, TX.
- Aug 2005–
May 2006 **Campus Computing Associate**, *Rice University*, Houston, TX.
Provided technical support to students and staff at our college, as well as helping to maintain the network and college-owned computers
- May 2003–
Aug 2003 **Database Developer**, *Susan G Komen Race for the Cure*, Houston, TX.
Provided technical support to students and staff at our college, as well as helping to maintain the network and college-owned computers
- 2001,2003 **Intern**, *Zebra Imaging*, Austin, TX.
Helped to design, build, and test prototype computerized lighting systems used to create short, full-motion holographic "videos" and special effects.

Activities

- May 2008–
Present **Trip Leader**, *Rice Outdoors Programs and Education*.
I regularly lead groups of 6-10 students on climbing and camping trips around Texas and assist with the planning and execution of numerous clinics and special events every semester. I am also a member of the program's strategic planning committee.
- Jan 2004–
May 2008 **President, Webmaster**, *Rice Outdoors Club*.
As president and webmaster, I tripled the membership of the club to 150 annual paying members, with several hundred more participating in over 100 events annually, making us the single largest club at Rice.
- Aug 2008–
2009 **Member**, *Rice Robotics Club*.

- Jan 2007–
May 2008 **President, Founder, Rice Triathlon Club.**
The Rice Triathlon Club is a new organization whose goal is to promote multisport participation at Rice University, and in the near future host an on-campus triathlon which I have been a principle organizer of.
- Aug 2003–
May 2004 **Sound Designer, Engineer, The Rice Players.**
Designed roughly half a dozen shows with the Players as well as other community organizations
- Contributing Writer, Rice Thresher and OPEN Magazine.**

Computer skills

Web Software	Drupal, PHP, MySQL, XHTML/CSS	Haptic Software	X3D, H3D, HDAL
Operating Systems	Windows, Unix	Academic Software	Matlab, Mathematica
Languages	C++, Python	Development Software	SVN, MSVS7/8/9

Awards and Honors

- Summer 2003 - Texas Aerospace Scholars Design Competition - Winner - Nominated by a Texas State Legislator to participate in TAS, a year-long relationship with NASA that includes individual design projects and mentoring by NASA engineers and astronauts, culminating in a week-long hands-on design competition at NASA's Johnson Space Center; as elected systems manager I led our team to an overall victory
- Fall 2003 - Rice LegoLab Engineering Design Competition - Winner - Designed the winning robot in an annual competition between over 24 teams of engineers. More info at <http://www.owl.net.rice.edu/elec201/>
- Recipient of Merit Scholarship for Aspiring Aerospace Engineers
- Co-inventor of patent - "Apparatus and Method for Providing Clean Air in a Defined Space"

Theatre Work

- Sound Designer - And Baby Makes Seven (Rice Players)
- Sound Operator/Engineer - Terra Nova (Rice Players)
- Sound Designer - Red Scare on Sunset (Rice Players)
- Sound Operator - SAS Night 2004 (campus cultural awareness event)
- Sound Operator/Engineer - St. Andrew's Evening of Music (fundraiser for merit-based scholarships)

Certifications and Training

- Red Cross First Aid / CPR Certified
- NOLS Wilderness First Aid Certified
- Leave No Trace Certified Trainer