

Education

PhD in Robotics (2007-present, with expected completion by May 2011)

Robotics Institute, School of Computer Science, Carnegie Mellon University

Research topics: Real-time computer vision, physics and statistics based signal processing, machine learning, display technology, augmented reality

GPA: 3.7 / 4.0

MS in Robotics (2005-2007)

Robotics Institute, School of Computer Science, Carnegie Mellon University

Coursework: Computer Vision, Machine Learning, Robotic Manipulation

GPA: 3.7 / 4.0

BS in Computer Science with Research Honors (2001-2005)

University of Rochester

Coursework: Compilers, Algorithms, Artificial Intelligence

GPA: 3.6 / 4.0

Work Experience

Graduate Intern (Sep 2010 - Jan 2011)

Disney Research Zürich

- Developed hardware, software, and algorithms for a three-dimensional display

Graduate Intern (May 2006 - Aug 2006)

Intel Research Pittsburgh

- Used machine learning techniques to develop an automated tool that assesses quality of Optical Coherence Tomography (OCT) images
- Collaborated with Ophthalmologists at University of Pittsburgh Hospital

Research Assistant (May 2003 - May 2005)

University of Rochester

- Worked on computer vision based obstacle avoidance
- Developed multi-agent coordination theory and software implementation

Teaching Assistant (August 2002 – May 2003, January 2004-May 2004)

University of Rochester

- Taught small student groups in workshop sessions
- Guided student teams through multi-week programming projects

Skills

Primary programming languages: C++, MATLAB, Java, Python, CUDA

Speaking and presentation: Toastmasters Advanced Communicator Silver certification

Organization and leadership: Officer for Toastmasters and Graduate Student Organization

Teaching: Teaching Assistant for Artificial Intelligence, Intro to CS, and Computer Vision

Publications (All papers and videos at www.cs.cmu.edu/~pbarnum/research.html)

A Multi-Layered Display with Water Drops

P. C. Barnum, S. G. Narasimhan, and T. Kanade
SIGGRAPH, August 2010

A Projector-Camera System for Creating a Display with Water Drops

P. C. Barnum, S. G. Narasimhan, and T. Kanade
Workshop on Projector-Camera Systems (PROCAMS), June 2009. (Best paper award)

Dynamic Seethroughs: Synthesizing Hidden Views of Moving Objects

P. C. Barnum, Y. Sheikh, A. Datta, and T. Kanade
International Symposium on Mixed and Augmented Reality (ISMAR), October 2009

Local Quality Assessment for Optical Coherence Tomography

P. C. Barnum, M. Chen, H. Ishikawa, G. Wollstein, and J. Schuman
International Symposium on Biomedical Imaging (ISBI), May, 2008.

Pathology Insensitive Quality Assessment for Optical Coherence Tomography

P. C. Barnum, M. Chen, H. Ishikawa, G. Wollstein, and J. Schuman
Association for Research in Vision and Ophthalmology (ARVO), April, 2008.

Analysis of Rain and Snow in Frequency Space

P. C. Barnum, S. G. Narasimhan, and T. Kanade
International Journal of Computer Vision (IJCV), December 2008

Spatio-Temporal Frequency Analysis for Removing Rain and Snow from Videos

P. C. Barnum, T. Kanade, and S. G. Narasimhan
Workshop on Photometric Analysis For Computer Vision (PACV), October 2007.

Quagents: A Game Platform for Intelligent Agents

C. Brown, G. Ferguson, P. C. Barnum, B. Hu, and D. Costello
AAAI Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2005

Honors

Toastmasters Advanced Communicator Silver certification (2010)

Toastmasters Advanced Leader Bronze certification (2008)

Rush Rhees Scholarship (2001-2005)

Tae Kwon Do Second Degree Black Belt (2003)

Additional Activities

Volunteer at Carnegie Museum of Natural History (2008-present)

Volunteer at Children's Hospital of Pittsburgh (2008-present)

Officer for Oakland Toastmasters (2006-present)

Robotics Graduate Student Organization Officer (2006-present)

Rochester Tae Kwon Do Instructor and Officer (2002-2005)