Tanya L. Crenshaw | Academic Vita

University of Portland, School of Engineering
5000 N. Willamette Blvd, MSC 145, Portland, OR 97203
crenshaw@up.edu | http://www.kaju.dreamhosters.com

Academic Appointments

Assistant Professor, Tenure Track 08/08 to present
University of Portland, School of Engineering Portland, OR

Research Assistant 01/04-07/08
University of Illinois, Department of Computer Science Urbana, IL

Teaching Assistant 08/02-01/04
University of Illinois, Department of Computer Science Urbana, IL

Education

University of Illinois, Champaign-Urbana, IL 08/02-07/08
Ph.D., Computer Science
Committee: Lui R. Sha (advisor), Elsa Gunter, Ralph Johnson, P. R. Kumar
Dissertation Title: Architectural Reference Models for Safety-Critical Control Systems

University of Portland, OR 08/94-05/98
Bachelor of Science, Electrical Engineering.

Professional Experience

Software Engineer 5/99-06/02
Wind River Beaverton, OR

Developed board support packages for MIPS-based platforms for the VxWorks real-time operating system (RTOS). Designed and implemented the memory management mechanism for the VxWorks AE real-time operating system for both 32-bit and 64-bit MIPS CPUs.

Software Engineer 5/97-5/99
Sharp Microelectronics of the Americas Camas, WA

Developed applications and support software for ARM-based microcontrollers, including a flash memory and CODEC driver. Authored a series of 10 application notes to clarify technical issues for customers and reduce demand on the technical support team.

Scholarly Work

Grants

Security for Cyber-Physical Systems using Artificial Long-Term Memory
Butine Faculty Development Grant. Fall 2010

Co-authored with Dr. Andrew Nuxoll of the School of Engineering, the grant proposes to develop an artificial intelligence that can detect anomalies suggesting potential security violations. Work to begin this summer.

Realizing Security Measures for Cyber-Physical Systems
Butine Faculty Development Grant. Spring 2009

Using a small fleet of autonomous robots, the grant proposed to discover and demonstrate solutions to counter security threats. The work resulted in two peer-reviewed publications (see [C.5] and [W.3]) and multiple opportunities for student learning, including a Fall 2009 honors project, 2009-2010 Senior Design Project, and Spring 2010 EE490 course.

A Formal Model Based Robust Architecture for Medical Device Composition
National Science Foundation IIS 07-20482 10/01/2007-9/30/2008

Solely responsible for preparing grant application materials based on initial rough drafts from three Co-PIs in three different research areas: Lui Sha in real-time systems, Jennifer Hou in wireless networking, and José Meseguer in formal methods. Revised initial drafts as well as composed significant portions of project summary and project descriptions.

Conference Publications

[C.5] Z. Faltersack, B. Burns, A. Nuxoll, T. L. Crenshaw. Ziggurat: Domain Independent Learning with Episodic Memory. Submitted to the *Thirteenth Consortium for Computing Sciences in Colleges Northwestern Regional Conference*. April 2011.

[C.4] T. L. Crenshaw, E. W. Chambers, H. Metcalf, U. Thakkar. A case study of retention practices at the University of Illinois at Urbana-Champaign. In *Technical Symposium on Computer Science Education (SIGCSE 2008)*. March 2008 (Acceptance Rate: 31%).

[C.3] T. L. Crenshaw, E. L. Gunter, C. L. Robinson, L. Sha, P. R. Kumar. The Simplex Reference Model: Limiting Fault-Propagation due to Unreliable Components. In *Proceedings of the 28th IEEE Real-Time System Symposium (RTSS 2007)*. December 2007.

[C.2] T. L. Crenshaw, C. L. Robinson, H. Ding, L. Sha, P. R. Kumar. A Pattern for Adaptive Behavior in Safety-Critical, Real-Time Middleware. In *Proceedings of the 27th IEEE Real-Time System Symposium (RTSS 2006)*. December 2006 (Acceptance Rate: 24%).

[C.1] T. L. Crenshaw, A. Tirumala, S. Hoke, M. Caccamo. A robust implicit asynchronous access protocol for real-time wireless collaboration. In *Proceedings of the 17th Euromicro Conference for Real-Time Systems (ECRTS 2005)*. July, 2005 (Acceptance Rate: 18%).

Journal Publications

[J.1] T. L. Crenshaw, S. Hoke, A. Tirumala, M. Caccamo. Robust Implicit EDF: A wireless MAC protocol for collaborative real-time systems. *ACM Transactions for Embedded Computing. Vol 6, No. 4.* November 2007.

Workshop Publications

[W.3] T. L. Crenshaw, S. Beyer. UPBOT: A Testbed for Cyber-Physical Systems. In the *3rd Workshop on Cyber Security Experimentation and Test (CSET)*. August 2010. (Acceptance Rate: 41%).

[W.2] M. Sun, T. L. Crenshaw, L. Sha. A Framework for Analyzing System Assumptions and Dependencies. In *Work in Progress Session for the 28th IEEE International Real-Time Systems Symposium (RTSS 2007)*. December 2007.

[W.1] A. Tirumala, T. L. Crenshaw, L. Sha, G. Baliga, S. Kowshik, C. Robinson, W. Witthawaskul. Prevention of failures arising from assumptions on software components in real-time systems. In *ACM SIGBED Review*. July 2005.

Presentations

Conference Presentations

"UPBOT: A Testbed for Cyber-Physical Systems." Presented at the 3rd Workshop on Cyber Security Experimentation and Test (CSET). Washington D.C. August 2010.

"A Case Study of Retention Practices at the University of Illinois at Urbana-Champaign." Presented at the *Technical Symposium on Computer Science Education (SIGCSE 2008)*. Portland, Oregon. March 2008.

"The Simplex Reference Model: Limiting Fault-Propagation due to Unreliable Components." Presented at the *28th IEEE Real-Time Systems Symposium (RTSS 2007)*. Tucson, Arizona. December 2007.

"A Pattern for Adaptive Behavior in Safety-Critical, Real-Time Middleware." Presented at the *27th IEEE Real-Time Systems Symposium (RTSS 2006)*. Rio de Janeiro, Brazil. December 2006.

"Innovative changes to computer science education for the recruitment and retention of women." Presented as a *Birds of a Feather at Technical Symposium on Computer Science Education (SIGCSE 2006)*. Houston, Texas. March 2006.

"RI-EDF: A Robust Implicit Access Protocol for Real-Time Wireless Collaboration." Presented at the *17th Euromicro Conference for Real-Time Systems (ECRTS 2005)*. Palma de Mallorca, Spain. July 2005.

Panel Moderator for "ChicTech, GirlTECH, and Others: Gender Equity Initiatives at the University of Illinois and Rice University." Presented at the *Grace Hopper Celebration of Women in Computing*. Chicago, Illinois. October 2004.

Invited Talks

"How to Choose Between a Screwdriver and a Drill." An invited talk at the Galois Technical Talk Seminar. Portland, OR. October 2009

"Diversity in Technology." A 1-hour radio program for *WEFT 90.1 FM Community Radio.* Champaign, IL. July 2007.

"Computer Science Community of Practice." An invited talk for *CS598LRS: Improving Your Research Skills.* University of Illinois at Urbana-Champaign. March 2007.

"Recruitment, preparation, and retention." Presented to the *Department of Computer Science Committee on Teaching and Evaluation.* University of Illinois at Urbana-Champaign. August 2006.

Service

Service to the University

Committee Member
Sexual Assault Prevention and Education Team (SAPET). 2008 to present

In 2008, 277 University of Portland students were surveyed about their experiences with sexual assault. Results demonstrated that over 29.8% percent of students had experienced some form of unwanted sexual contact on campus in the last 12 months. Led by Kristina Houck of the Health Center, the SAPET committee seeks to reduce this number. The committee is currently developing a curriculum to teach students about peer intervention for men and women witnessing potential sexual assault situations.

SAFE Advocate Network Member 2008 to present

University of Portland's *Stop Assault For Everyone* Advocate Network provides on-campus resources to students who have faced sexual assault, harassment, or domestic violence. Advocates are trained in providing information regarding emotional, medical, and legal concerns. Advocates rotate responsibility for a cell phone number that students may reach 24-hours a day.

Service to the School of Engineering

Committee Member
School of Engineering Scholarship Committee. Spring 2010

Four committee members were charged with updating the definition of scholarship for the School of Engineering. I attended twelve meetings, working with Dr. Matthew Kuhn, Dr. Khalid Khan, and Dr. Aziz Inan to identify a set of guidelines for scholarship in the School of Engineering. I worked as the liaison between the EE/CS faculty and the scholarship committee to make sure faculty feedback was solicited and incorporated into the document.

Committee Member
School of Engineering Space Committee. 2009-2010

Developed public display materials for the Shiley Hall Grand Opening.

Service to the Professional Community

Program Committee Member
Second Junior Researcher Workshop on Real-Time Computing 2008

External Reviewer: Textbook review, *Engineering Problem Solving with C++, Second Edition*, by D. Etter and J. Ingber, 2010. Euromicro Conference on Real-Time Systems (ECRTS) in 2006, 2005; Real-Time System Symposium (RTSS) in 2007, 2006, 2005, 2004; IEEE Transactions on Computers in 2007; Transactions on Pattern Languages of Programs (TPLoP) in 2008.

Awards & Honors

Mavis Memorial Fund Scholarship Award 2007
Awarded by the UIUC College of Engineering, recipients are selected based on their academic performance, research accomplishments, and demonstrated interest in engineering education.

Google Anita Borg Scholarship Finalist 2006
Nationwide scholarship awarded based on academic strength and demonstrated leadership.

Computer Science Teaching Assistant of the Year 2003

Outstanding Department Service Award 2002, 2003

UIUC Incomplete List of Teaching Assistants Ranked as Excellent by Their Students Fall 2002, Spring 2003, Fall 2003

AWSEM Group Leader of the Year 2000-2001
Selected from 31 group leaders for my outstanding contributions to outreach.

Professional Memberships

Member of the Association for Computer Machinery (ACM)

Professional Meetings Attended

USENIX Workshop on Cyber Security Experimentation and Test. Washington D.C. August 2010.

USENIX Security Symposium. Washington D.C. August 2010.

ACM Technical Symposium on Computer Science Education. Chattanooga, TN. March 2009.

ACM Technical Symposium on Computer Science Education. Portland, OR. March 2008.

IEEE Real-Time Systems Symposium. Tucson, Arizona. December 2007.

IEEE Real-Time Systems Symposium. Rio de Janeiro, Brazil. December 2006.

ACM Technical Symposium on Computer Science Education. Houston, TX. March 2006.

Euromicro Conference for Real-Time Systems. Palma de Mallorca, Spain. July 2005.

Grace Hopper Celebration of Women in Computing. Chicago, Illinois. October 2004.