Mark L. Chang

Contact Information

Franklin W. Olin College of Engineering
1000 Olin Way
Needham, MA 02492
USA

Voice: 781.292.2559
Fax: 781.292.2508
Email: mark.chang@olin.edu
Web: http://faculty.olin.edu/~mchang

Education

Ph.D. in Electrical Engineering, University of Washington, Seattle, WA, 2004.

Thesis: *Variable Precision Analysis for FPGA Synthesis*
Adviser: Scott Hauck

M.S., Electrical and Computer Engineering, Northwestern University, Evanston, IL, 2000.

Thesis: *Adaptive Computing in NASA Multi-Spectral Image Processing*
Adviser: Scott Hauck

B.S. with University and Departmental Honors, Electrical and Computer Engineering, The Johns Hopkins University, Baltimore, MD, 1997.

Research Interests

FPGA Architectures, Applications, and Tools; Reconfigurable Computing; Ubiquitous Computing; Computer Architecture; VLSI Design; Human Computer Interaction; Engineering Education.

Awards

Intel Corporation: 2002-2003 Intel Foundation Graduate Fellowship

University of Washington: Outstanding Graduate Research Assistant (2002), Nominated for the Yang Research Award (2002)

Northwestern University: Royal E. Cabell Fellowship (1997), ECE Department Best Teaching Assistant Honorable Mention (1998)

Johns Hopkins University: IEEE student chapter president (1996), Eta Kappa Nu chapter president (1996, 1997), Tau Beta Pi, Dean's List, Electrical and Computer Engineering Chair Award

National Merit Scholar, National Computer Systems Merit Scholarship

Employment

Assistant Professor — Franklin W. Olin College of Engineering
Needham, MA — 08/2004 - Present
Electrical and Computer Engineering faculty member.

Resident Scholar — Franklin W. Olin College of Engineering
Needham, MA — 08/2005 - Present
Living on campus as an academic resource for students at Olin College. Responsible for academic advising and intellectually stimulating activities in the residence halls.

Graduate Research Assistant — University of Washington
Seattle, WA — 07/2000 - 07/2004
Developed variable precision design tools for FPGAs.

Software Developer — Quicksilver Technologies, Inc.
Seattle, WA — 07/2001 - 10/2001
Assisted design and development of software development tools for Quicksilver's reconfigurable hardware.

Graduate Research Assistant — Northwestern University
Evanston, IL — 09/1997 - 06/2000
Developed FPGA implementations of NASA image processing applications.

Customer service operator — National Computer Systems
Iowa City, IA — 06/1997 - 08/1997
Phone operator for the Department of Education.

Undergraduate Research Assistant — Johns Hopkins University
Baltimore, MD — 10/1994 - 06/1997
Worked on a portable high performance linear algebra library. Investigated the IEEE-1394 draft standard in conjunction with the JHU Applied Physics Laboratory for a 1394-based spacecraft bus design.

Assistant System Administrator — Johns Hopkins University
Baltimore, MD — 03/1995 - 06/1997
Maintained a network of servers and workstations for the Center for Language and Speech Processing.

Webmaster — Johns Hopkins University
Baltimore, MD — 05/1995 - 01/1997
Designed and maintained a web site for the Maryland Space Grant Consortium.

Embedded Software Developer — Anton-Paar, GmbH
Graz, Austria — 06/1996 - 07/1996
Participated in a cooperative internship with the Technical University of Graz, Austria. Developed embedded software for use in concentration determination instruments.

Programmer and technician — Products Unlimited, Corp.
Iowa City, IA — Summer 1989 - 1994
Set up and maintained a network of PCs for a small engineering office. Developed computer-aided testing facilities using IEEE-488 instruments and hardware.

Publications

Mark L. Chang, Scott Hauck, "Précis: A Design-Time Precision Analysis Tool", *IEEE Design and Test of Computers*, Vol. 22, No. 4, pp. 349-361, July-August 2005.

Mark L. Chang, *Variable Precision Analysis for FPGA Synthesis*, Ph.D. Dissertation, University of Washington, Department of Electrical Engineering, 2004.

Mark L. Chang, Scott Hauck, "Automated Least-Significant Bit Datapath Optimization for FPGAs", *IEEE Symposium on Field-Programmable Custom Computing Machines*, April, 2004.

Mark L. Chang, Scott Hauck, "Least-Significant Bit Optimization Techniques for FPGAs", poster presented at *ACM/SIGDA International Symposium on Field-Programmable Gate Arrays*, February, 2004.

Mark L. Chang, Scott Hauck, "Variable Precision Analysis for FPGA Synthesis", *Earth Science Technology Conference*, June, 2003.

Mark L. Chang, Scott Hauck, "Précis: A Design-Time Precision Analysis Tool", *Earth Science Technology Conference*, June, 2002.

Mark L. Chang, Scott Hauck, "Précis: A Design-Time Precision Analysis Tool", *IEEE Symposium on Field-Programmable Custom Computing Machines*, pp. 229–238, 2002.

Mark L. Chang, *Adaptive Computing in NASA Multi-Spectral Image Processing*, M.S. thesis, Northwestern University, Dept. of ECE, December, 1999.

Mark L. Chang, Scott Hauck, "Adaptive Computing in NASA Multi-Spectral Image Processing", *Military and Aerospace Applications of Programmable Devices and Technologies International Conference*, 1999.

P. Banerjee, A. Choudhary, S. Hauck, N. Shenoy, C. Bachmann, M. Chang, M. Haldar, P. Joisha, A. Jones, A. Kanhare, A. Nayak, S. Periyacheri, M. Walkden, "MATCH: A MATLAB Compiler for Adaptive Computing Systems", *Northwestern University Department of Electrical and Computer Engineering Technical Report CPDC-TR-9908-013*, 1999.

Conference Posters

C. Murphy, D. Lindquist, A.M. Rynning, T. Cecil, S. Leavitt, M.L. Chang, "Low-Cost Stereo Vision on an FPGA", IEEE Symposium on Field-Programmable Custom Computing Machines, 2007.

Donations

Altera Corp., donation of FPGA hardware and software.

Hewlett-Packard, Inc., donation of workstations for VLSI teaching laboratory (2005).

Xilinx, Inc., donation of FPGA hardware and software.

Professional Activities

Reviewer, IEE Proceedings of Computers & Digital Techniques, IEEE Transactions on VLSI Systems, IEEE Transactions on Computer-Aided Design of Integrated Circuits & Systems, IEEE Transactions on Instrumentation & Measurement, ACM Transactions on Design Automation of Electronic Systems, EURASIP Journal of Embedded Systems.

Program Committee Member, IEEE Microelectronic Systems Education Conference, 2005, 2007.

Program Committee Member, IEEE International Conference on Field-Programmable Technology, 2007.

Program Committee Member, International Conference on Field Programmable Logic and Applications, 2005, 2006, 2007.

Consulting

NetFrameworks, Inc. & Applied Minds, Inc. 07/2001 - 09/2001
Primary software developer for proprietary groupware system.

Hunter Benefits Consulting Group 09/2000
Lead software developer.

HumaniTree.com, LLC 12/1998 - 03/1999
Web developer and Java programmer.

Committees and Department Service

Advising Advisory committee, 2004.
Committee on Diversity and the Academic Experience, 2005 - present.
Electrical and Computer Engineering Faculty Search committee, 2004, 2005.
Electrical and Computer Engineering Program Group, 2004 - present.
Faculty / IT committee, 2004 - present.
Honor Board faculty representative, 2004 - present.
Wellesley Olin Working Group committee, 2004 - present.

Teaching

Franklin W. Olin College of Engineering, Needham, MA

ENGR 3410: Computer Architecture, Fall 2004, 2005, 2006.
ENGR 3430: Digital VLSI Design, Spring 2005, 2006, 2007.
ENGR 3499a: Special Topics in Electrical and Computer Engineering, Embedded Systems Design, Spring 2007.
ENGR 4190: Senior Consulting Program for Engineering, 2005 (John Deere and Motorola), 2006 (IBM Research)
Olin Works Co-Curricular, Fall 2005, Spring 2006.
Green Engineering Co-Curricular, Spring 2005.

University of Washington, Seattle, WA

EE 471: Computer Design and Organization. Instructor, Winter 2003.
Overall class evaluation rating 4.13/5.0.
(http://www.washington.edu/cec/e/EE471A4003.html).

Northwestern University, Evanston, IL

B01: Introduction to Digital Logic Design. Instructor, Summer 1999.
Overall class evaluation rating 5.56/6.0.
C91: VLSI Systems Design. Teaching Assistant, Winter 1999.
C92: VLSI Systems Design Projects. Teaching Assistant, Spring 1998.