

CURRICULUM VITAE

Wu-chang Feng October 3, 2006

Education

Ph.D. 1999 Computer Science and Engineering, University of Michigan, Ann Arbor
MSE 1994 Computer Science and Engineering, University of Michigan, Ann Arbor
BS 1992 Computer Engineering, Pennsylvania State University (with honors)

Employment

Associate Professor, Department of Computer Science, Portland State University,
Portland OR, 2006–present.

Assistant Professor, Department of Computer Science, Portland State University,
Portland OR, 2004–2006.

Assistant Professor, Department of Computer Science Engineering, Oregon Health and
Science University, Beaverton OR, 2001–2004.

Senior Architect, Proxinet, Inc. and Pumatech Inc., Emeryville CA, 1999–2001.

Research Staff IBM T.J. Watson Research Center, Hawthorne NY, 1996, 1997, 1998,
1999.

Research Assistant, University of Michigan, Ann Arbor MI, 1994–1999.

Teaching Assistant, University of Michigan, Ann Arbor MI, 1992–1994.

Dissertation

Improving Internet Congestion Control and Queue Management Algorithms, May 1999.
Advisor: Kang Shin, University of Michigan.

Refereed Publications or Other Creative Achievements

Books

Chapters

Francis Chang, Wu-chang Feng, Wu-chi Feng, Kang Li, "Chapter 3: Efficient Packet
Classification with Digest Caches", Network Processor Design: Issues and Practices, vol.
3, Ed. P. Crowley, M. Franklin, H. Hadimioglu, P. Onufryk, Morgan Kaufmann
Publishers, 2005, ISBN: 0-12-088576-3.

Articles

Chris Chambers, Wu-chang Feng, Wu-chi Feng, "Public Server MMOs", in Proceedings of NetGames 2006, October 2006.

Jie Huang, Wu-chi Feng, Nirupama Bulusu, Wu-chang Feng "Cascades: Scalable, Flexible, and Composable Middleware for Multimodal Sensor Networking Applications", MMCN 2006, January 2006.

Chris Chambers, Wu-chang Feng "Patch Scheduling for On-line Games", NetGames 2005, October 2005.

Chris Chambers, Wu-chang Feng, Sambit Sahu, Debanjan Saha "Measurement-based Characterization of a Collection of On-line Games", in Internet Measurement Conference 2005, October 2005. **Winner of Best Student Paper Award.**

Chris Chambers, Wu-chang Feng, Wu-chi Feng, Debanjan Saha "Mitigating Information Exposure to Cheaters in Real-Time Strategy Games", ACM NOSSDAV 2005, June 2005.

Wu-chi Feng, Nirupama Bulusu, Wu-chang Feng, "Dissecting the Video Sensing Landscape", ACM NOSSDAV 2005, June 2005.

Ashvin Goel, Wu-chang Feng, David Maier, Wu-chi Feng, Jonathan Walpole, "Forensix: A Robust, High-Performance Reconstruction System", in International Conference on Distributed Computing Systems Security Workshop (SDCS-2005) June 2005.

Wu-chang Feng, Francis Chang, Wu-chi Feng, Jonathan Walpole "A Traffic Characterization of Popular On-line Games", IEEE/ACM Transactions on Networking, vol. 13, no. 3, June 2005.

Wu-chi Feng, Brian Code, Ed Kaiser, Wu-chang Feng, Mickael Le Baillif "Panoptes: Scalable Low-Power Video Sensor Networking Technologies", ACM Transactions on Multimedia Computing, Communications, and Applications, vol. 1, no. 2, May 2005.

Wu-chang Feng, Ed Kaiser, Wu-chi Feng, Antoine Luu "The Design and Implementation of Network Puzzles", in IEEE INFOCOM 2005, March 2005.

Jim Snow, Wu-chi Feng, Wu-chang Feng "A Low-Power Time Division Multiple Access MAC Protocol for 802.11 Wireless Networks", IEEE Wireless Communications and Networking Conference, March 2005.

Deepa Srinivasan, Wu-chang Feng "Performance Analysis of Multi-Dimensional Packet Classification on Programmable Network Processors", in IEEE LCN 2004, November 2004.

Francis Chang, Wu-chang Feng, Kang Li, "Approximate Caches for Packet Classification", in Proc. IEEE INFOCOM 2004, March 2004.

Francis Chang, Wu-chang Feng, Wu-chi Feng, Kang Li, "Efficient Packet Classification with Digest Caches", in Proc. of the Third Workshop on Network Processors and Applications (NP3), February 2004.

Chris Chambers, Wu-chang Feng, Wu-chi Feng, Debanjan Saha, "A Geographic Redirection Service for On-line Games", in Proc. ACM Multimedia 2003 (short paper), November 2003.

Wu-chi Feng, Brian Code, Ed Kaiser, Mike Shea, Wu-chang Feng, "Panoptes: A Scalable Architecture for Video Sensor Networking Applications", in Proc. ACM Multimedia 2003, November 2003.

Kang Li, Francis Chang, Damien Berger, Wu-chang Feng, "Architectures for Packet Classification Caching", in Proc. of IEEE International Conference on Networks (ICON), September 2003.

Wu-chang Feng, "The Case for TCP/IP Puzzles", in Proc. of ACM SIGCOMM Workshop on Future Directions in Network Architecture (FDNA-03), August 2003.

Wu-chang Feng, Ashvin Goel, Abdelmajid Bezzaz, Wu-chi Feng, Jonathan Walpole, "TCPivo: A High-Performance Packet Replay Engine", in Proc. ACM SIGCOMM Workshop on Models, Methods, and Tools for Reproducible Network Research (MoMeTools), August 2003.

Wu-chang Feng, Wu-chi Feng, "On the Geographic Distribution of On-line Game Servers and Players", in Proc. of NetGames 2003, May 2003.

Francis Chang, Wu-chang Feng, "Modeling Player Session Times of On-line Games", in Proc. of NetGames 2003, May 2003.

Wu-chang Feng, Francis Chang, Wu-chi Feng, Jonathan Walpole, "Provisioning On-line Games: A Traffic Analysis of a Busy Counter-Strike Server", in Proc. of the Internet Measurement Workshop, November 2002.

Wu-chang Feng, Kang Shin, Dilip Kandlur, Debanjan Saha, "The Blue Active Queue Management Algorithms", IEEE/ACM Transactions on Networking, Vol. 10, No. 4, August 2002. **Winner of the IEEE Communications Society 2003 William R. Bennett Prize for Best Paper in IEEE/ACM Transactions on Networking. Winner of Best IBM Research Paper Award in Computer Science, Electrical Engineering, and Math 2002.**

Francis Chang, Wu-chang Feng, Wu-chi Feng, Jonathan Walpole, "Provisioning On-line Games: A Traffic Analysis of a Busy Counter-Strike Server", ACM Computer Communications Review, vol. 32, no. 3, July 2002.

Wu-chang Feng, Dilip Kandlur, Debanjan Saha, Kang Shin, "Blue: An Alternative Approach To Active Queue Management", in Proc. of NOSSDAV 2001, June 2001.

Wu-chang Feng, Dilip Kandlur, Debanjan Saha, Kang Shin, "Stochastic Fair Blue: A Queue Management Algorithm for Enforcing Fairness", in Proc. of INFOCOM 2001, April 2001.

Wu-chang Feng, Dilip Kandlur, Debanjan Saha, Kang Shin, "Adaptive Packet Marking for Maintaining End-to-End Throughput in a Differentiated-Services Internet," IEEE/ACM Transactions on Networking, v.7, n.5, Oct. 1999.

Wu-chang Feng, Dilip Kandlur, Debanjan Saha, Kang Shin, "Understanding and Improving TCP Performance over Networks with Minimum Rate Guarantees" *IEEE/ACM Transactions on Networking*, Vol. 7, No. 2, April 1999.

Wu-chang Feng, Dilip Kandlur, Debanjan Saha, Kang Shin, "A Self-Configuring RED Gateway", in *Proc. of INFOCOM '99*, March 1999.

Tarek Abdelzaher, Martin Bjorklund, Scott Dawson, Wu-chang Feng, Farnam Jahanian, Scott Dawson, Pedro Marron, Ashish Mehra, Todd Mitton, Anees Shaikh, Zhiquan Wang, Hengming Zou, "ARMADA Middleware and Communication Services", *Journal of Real-Time Systems*, Vol. 16, No. 1, January 1999.

Wu-chang Feng, Dilip Kandlur, Debanjan Saha, Kang Shin, "Adaptive Packet Marking for Providing Differentiated Services in the Internet" in *Proc. of 1998 International Conference on Network Protocols (ICNP '98)*, October 1998.

Wu-chang Feng, Wu-chi Feng, "The Impact of Active Queue Management on Multimedia Congestion Control," in *Proc. of International Conference on Computer Communications and Networks (IC3N) 1998*, October 1998.

Tarek Abdelzaher, Scott Dawson, Wu-chang Feng, Sunondo Ghosh, Farnam Jahanian, Scott Johnson, Ashish Mehra, Todd Mitton, Jeremy Norton, Anees Shaikh, Kang Shin, V. Vaidyan, Zhiquan Wang, Hengming Zou, "ARMADA Middleware Suite", in *Proc. of IEEE RTSS 1997 Workshop on Middleware for Distributed Real-Time Systems and Services*, December 1997.

Wu-chang Feng and Kang Shin, "Impact of Selection Functions on Routing Algorithm Performance in Multicomputer Networks," in *Proc. of the 11th International Conference on Supercomputing*, July 1997.

Wu-chang Feng, Dilip Kandlur, Debanjan Saha, Kang Shin, "Understanding TCP Dynamics in an Integrated Services Internet" in *Proc. of NOSSDAV 1997*, May 1997.

Jennifer Rexford, Wu-chang Feng, James Dolter, Kang Shin, "PP-MESS-SIM: A Flexible and Extensible Simulator for Evaluating Multicomputer Interconnection Networks", *IEEE Transactions on Parallel and Distributed Systems*, Vol. 8, No. 1, pp. 25-40, Jan. 1997.

Jennifer Rexford, Wu-chang Feng, James Dolter, Kang Shin, "PP-MESS-SIM: A Simulator for Evaluating Multicomputer Interconnection Networks," in *Proc. 28th Annual Simulation Symposium*, Apr. 1995.

James Dolter, Stuart Daniel, Ashish Mehra, Jennifer Rexford, Wu-chang Feng, and Kang Shin, "SPIDER: Flexible and Efficient Communication Support for Point-to-point Distributed Systems," in *Proc. International Conference on Distributed Computing Systems (ICDCS)*, June 1994.

T. Snead, C. Mirkin, K. Lu, S. Nguyen, W. Feng, H. Beckman, G. Geoffroy A. Rheingold, and B. Haggerty, "Formation of Substituted Ferracyclopentadiene Complexes by the Reaction of Alkynes with Protonated Diferra-mu-Azaallylidene Complexes", *Organometallics*, 1992, 11, 2613.

K. Garrett, W. Feng, H. Matsuzaka, G. Geoffroy, A. Rheingold, "Further Studies of the Synthesis of 1-Naphthols and 4-Hydroxy-5,6-dimethylbenzothiophene by Protonation of $\text{Cp}(\text{CO})_2\text{W}=\text{C}(\text{Tol})$ and $\text{Cp}(\text{CO})_2\text{W}=\text{C}(\text{2-C}_4\text{H}_3\text{S})$ in the Presence of Alkynes and CO", 1990, 394, 251.

K. Garrett, J. Sheridan, D. Pourreau, W. Feng, G. Geoffroy, D. Staley, A. Rheingold, "Transient Generation of the Reactive Carbene Complex $[\text{Cp}(\text{CO})_2\text{W}=\text{CH}(\text{Tol})]^+$ and Its Reactions with Alkynes to Form Vinylcarbene, Allyl, Naphthol, Diene, and Metallafuran Complexes", Journal of the American Chemical Society, 1989, 111, 8383.

Book Reviews

Completed exhibitions, performances, productions, films, etc.

Completed compositions, scripts, scores, commissions, etc.

Other

Ed Kaiser, Wu-chang Feng, Wu-chi Feng, Antoine Luu "Reducing Malicious Traffic with IP Puzzles", in ACM SIGCOMM 2004 (poster session), August 2004.

Ed Kaiser, Wu-chang Feng, Wu-chi Feng, Antoine Luu "Reducing Malicious Traffic with IP Puzzles", in USENIX Security 2004 (poster session), August 2004.

Ashvin Goel, Mike Shea, Sourabh Ahuja, Wu-chang Feng, Wu-chi Feng, David Maier, Jonathan Walpole, "Forensix: A Robust, High-Performance Reconstruction System", in 19th Symposium on Operating Systems Principles (SOSP) (poster session), October 2003.

Francis Chang, Wu-chang Feng, Kang Li, "Approximate Caches for Packet Classification", in ACM SIGCOMM (poster session), August 2003.

Francis Chang, Wu-chang Feng, Wu-chi Feng, Jonathan Walpole, "Provisioning On-line Games: A Traffic Analysis of a Busy Counter-Strike Server", ACM SIGCOMM (poster session), August 2002.

Non-Refereed Publications or Other Creative Achievements

Books

Chapters

Articles

Wu-chang Feng, "A Method for Protecting the Internet using TCP and IP Puzzles", OHSU Technology Invention Disclosure #714, 8/2003.

Wu-chang Feng, Chris Chambers, Wu-chi Feng, "Centralized Geographic and Latency Based Redirection of Game Players", OHSU Technology Invention Disclosure #744, 11/2003.

Book reviews

Completed works

Completed exhibitions, performances, productions, films, etc.

Completed compositions, scripts, scores, commissions, etc.

Other

Presentations at Professional Meetings

Conference Presentations

INFOCOM 2005, “The Design and Implementation of Network Puzzles”, Miami, Florida, March 2005

Workshop on Network Processors and Applications (NP3) 2004, “Efficient Packet Classification with Digest Caches”, Madrid, Spain, March 2004.

ACM SIGCOMM 2003 Workshop on Future Directions in Network Architecture, “The Case for IP Puzzles”, Karlsruhe, Germany, August 2003.

ACM SIGCOMM 2003 Workshop on Models, Methods, and Tools for Reproducible Network Research, “TCPivo: A High-Performance Packet Replay Engine”, Karlsruhe, Germany, August 2003.

NetGames 2003, “On the Geographic Distribution of On-line Game Servers and Players”, Redwood City, California, May 2003.

NetGames 2003, “Modeling Player Session Times of On-line Games”, Redwood City, California, May 2003.

Internet Measurement Workshop 2002, “Provisioning On-line Games: A Traffic Analysis of a Busy Counter-Strike Server”, Marseille, France, November 2002.

INFOCOM 2001, “Stochastic Fair Blue: A Queue Management Algorithm for Enforcing Fairness”, April 2001.

Network and Operating System Support for Digital Audio and Video (NOSSDAV) 2001, “Blue: An Alternative Approach to Active Queue Management”, Port Jefferson, New York, June 2001.

INFOCOM 1999, “A Self-Configuring RED Gateway”, New York, New York, March 1999.

International Conference on Network Protocols (ICNP) 1999, “Adaptive Packet Marking for Providing Differentiated Services in the Internet”, Austin, Texas, October 1998.

Network and Operating System Support for Digital Audio and Video (NOSSDAV) 1997, “Understanding TCP Dynamics in an Integrated Services Internet”, St. Louis, Missouri, May 1997.

28th Annual Simulation Symposium, “PP-MESS-SIM: A Simulator for Evaluating Multicomputer Interconnection Networks,” Phoenix, Arizona, April 1995.

Invited Presentations

Seoul National University “The Design and Implementation of Network Puzzles”, Seoul, South Korea, September 2006.

Supercomputing 2005 MasterWorks, “Got MIPS? The Need for Speed in On-line Games” Seattle, Washington, November 2005.

IBM Research talk, “The Forensix “Computer TiVo””, Hawthorne, New York, October 2005.

NSF PI Meeting, “The Forensix “Computer TiVo””, Irvine, California, September 2005.

NSF PI Meeting, “PuzzleNet: Network Layer Client Puzzles”, Irvine, California, September 2005.

University of British Columbia colloquium, “The Design and Implementation of Network Puzzles”, October 2004.

IBM Research colloquium, “The Design and Implementation of Network Puzzles”, Hawthorne, NY, April 2004.

University of Oregon colloquium, “The Design and Implementation of Network Puzzles”, March 2004.

Cisco virtual colloquium series, “The Design and Implementation of Network Puzzles”, March 2004.

University of Bordeaux (ENSEIRB), “The Design and Implementation of Network Puzzles”, Bordeaux, France, February 2004.

Intel colloquium series, “The Case for TCP/IP Puzzles”, Hillsboro, Oregon, October 2003.

Intel IXA Workshop, “Hashes, Caches, and other projects at OGI/OHSU”, Santa Clara, CA, September 2003.

NetGames 2003 panel, “Multiplayer Games: What is the Research Agenda”, Redwood City, CA, May 2003.

University of Bordeaux (ENSEIRB), “On-line Games and Routers”, Bordeaux, France, November 2002.

Pacific Northwest National Laboratory, “Project report: Stream Queries for Network Monitoring”, Richland, WA, July 2002.

Intel IXA Workshop, “An IXP-based networking practicum course”, Hillsboro, OR, May 2002.

Honors, Grants and Fellowships

Honors

Best Student Paper Award (Chris Chambers), Internet Measurement Conference 2005.

IEEE Communications Society 2003 William R. Bennett Prize for Best Paper in IEEE/ACM Transactions on Networking.

Best IBM Research Paper Award in Computer Science, Electrical Engineering, and Math 2002.

Grants

Tom Shrimpton, Wu-chang Feng (co-PI), “Making Network Layer Proofs-of-Work Work”, NSF CNS 0627752 (12% funding rate), **\$399,711** (10/2006–10/2009).

Wu-chang Feng (PI), Wu-chi Feng, David Maier, Jonathan Walpole, “Forensix: Large-scale Tamper-resistant Computer Forensic Systems” NSF ANI-0230960 Strategic Technologies for the Internet (8% funding rate), **\$749,810** (11/2002–9/2006). REU supplement **\$12,500** (5/2003)

Wu-chang Feng (PI), “Infrastructure for On-line Game Services” IBM Faculty Partnership Award, **\$80,000** (5/2003–current)

Wu-chang Feng (PI), “Efficient Intrusion Detection and Response Systems”, Oregon University System ETIC, **\$121,151** (7/2002–12/2003).

Wu-chang Feng (PI), “Efficient Intrusion Detection and Response Systems”, Intel Research Council, **\$246,000** (11/2001–11/2004)

Wu-chang Feng (PI), “An IXP Laboratory for the OGI School of Science and Engineering at OHSU”, Intel IXA Curriculum Grant, **\$19,000** (1/2002–12/2002).

Nirupama Bulusu, Wu-chi Feng, Wu-chang Feng (Co-PI), “Infrastructure to Support Heterogeneous and Dynamic Sensor Networking Research”, NSF CNS Research Resources (33% funding rate), **\$110,000** (8/2004–current)

David Maier, Wu-chang Feng (Co-PI), David Hansen, “Undergraduate Research Institute”, Oregon Intel-OUS Engineering and Computer Science, **\$38,937** (4/2004–8/2004)

Wu-chi Feng, Jonathan Walpole, Wu-chang Feng (Co-PI), “A Flexible Video Networking Infrastructure to Support Massively Scalable Information Flows”, NSF EIA Research Resources, **\$139,980** (10/2001–9/2004)

Lois Delcambre, David Maier, Wu-chang Feng (Co-PI), “Stream Queries for Network Monitoring”, ARDA, **\$43,988** (6/2002–9/2002).

Wu-chang Feng (PI), Intel Xscale Technology Equipment Grant, **\$57,680** (5/2004)

Wu-chang Feng (PI), Intel PlanetLab, **\$9,429** (8/2003)

Wu-chang Feng (PI), Intel Netstructure, **\$119,970** (8/2002)

Wu-chang Feng (PI), Intel IXA Curriculum, **\$17,520** (1/2002–12/2002)

Fellowships

IBM Research Fellowship (1997–1999)

Other

Student Marshal for Computer Engineering at Penn State University (1992)

Evan Pugh Senior Award, Penn State University (1992)

Evan Pugh Junior Award, Penn State University (1991)

President's Freshman Award, Penn State University (1989)

Golden Key National Honor Society (1990-1992)

Other Research and Other Creative Achievements

Forensix source-code release, <http://forensix.sourceforge.net>

PCCS source-code release <http://pccs.sourceforge.net>

TCPivo source-code release <http://www.thefengs.com/wuchang/work/tcpivo/>

Other Teaching, Mentoring and Curricular Achievements

Courses Taught: PSU

PSU CS 576 Advanced Security Seminar

PSU CS 592 Security Practicum

PSU CS 494/594 TCP/IP Internetworking Protocols

PSU CS 200 Computer Systems Programming I

Courses Taught: Previous

OGI/OHSU CSE 524 TCP/IP Internetworking Protocols

OGI/OHSU CSE 525 Advanced networking

OGI/OHSU CSE 580 Networking Practicum with the IXP

High-school Students Mentored

Travis Mandel (Summer 2006)

Ryan Meyer (Summer 2006)

Undergraduates mentored

Louis Bavoil (ENSEIRB)
Damien Berger (ENSEIRB)
Abdelmajid Bezzaz (ENSEIRB)
Jin Choi (University of Waterloo)
Brian Code (University of Waterloo)
Yves Grealou (ENSEIRB)
Miria Grunick (Clarion University)
Jennifer Johnson (NJIT)
Ed Kaiser (University of Waterloo)
Antoine Luu (ENSEIRB)
Ludovic Martorell (ENSEIRB)
Mike Shea (University of Waterloo)
Gary Yeung (University of Waterloo)
Zvi Zemel (University of Waterloo)

Masters students with theses

Deepa Srinivasan

Graduate students mentored

Francis Chang

Jim Snow

Ph.D. committees

Kang Li (November 2002)

Ashvin Goel (May 2003)

Current Ph.D. students

Chris Chambers

Ed Kaiser

Other Community Outreach Achievements

Faculty participant at Intel International Science and Engineering Fair 2004

Mentored three high-school students from Merlo Station High School in 2004/2005

Significant Professional Development Activities

NSF Panelist, March 2006, Arlington, Virginia
NSF Panelist, November 2005, Arlington, Virginia
Participant, HSARPA/NSF EMIST workshop, September 2005, Irvine, California
Participant, HSARPA PREDICT workshop, September 2005, Irvine, California
Participant, NSF CyberTrust PI meeting, September 2005, Irvine, California
Participant, NSF CyberTrust PI meeting, September 2004, Pittsburgh, Pennsylvania
NSF Panelist, March 2004, Arlington, Virginia
Participant, NSF ANIR PI meeting, January 2003, Reston, Virginia
DARPA visit, January 2003, Arlington, Virginia
NSF Panelist, January 2003, Arlington, Virginia
ARDA PI meeting, August 2002, Richland, Washington
NSF Panelist, June 2002, Arlington, Virginia
Participant, DARPA PI meeting, March 2002, Arlington, Virginia
NSF Panelist, May 2001, Arlington, Virginia
Participant, DARPA Large Scale Networking Workshop, March 2001, Vienna, Virginia

Governance and Other Professionally-Related Service

Governance Activities for the University, College, Department

Member, PSU Faculty Grievance Committee, 2005–present.
Member, Graduate Committee, 2004–present.
Participation in CSE education coordination 2002
Creator and manager of research portal OGIWorks (<http://ogiworke.org>) 2002
Manager of adjuncts for communications courses 2002
Creator and manager of networking and communication area cores 2002

Professionally-related Service

COMSWARE 2006 Program Committee
NOSSDAV 2006 Program Committee

NetGames 2005 Publicity chair
NOSSDAV 2005 Program Committee
Reviewer ACM SIGCOMM 2005, 2003, 2002
Reviewer IBM Systems Journal 2005
Reviewer IEEE Transactions on Multimedia
ACM SIGCOMM NetGames 2004 Workshop Program Committee Chair
ACM SIGCOMM NetGames 2004 Workshop General Chair
ACM SIGCOMM 2004 Local Arrangements Chair
Reviewer ICC 2004
Reviewer ACM Multimedia 2004, 2002
Reviewer Unix Network Programming, Vol. 1, 3rd ed.
Reviewer Journal of Communications and Networks 2004
Reviewer Network Congestion Control: Managing Internet Traffic, M. Welzl, Wiley
Reviewer IEEE/ACM Transactions on Networking 2004, 2002
Reviewer Telecommunication Systems Journal - Special Issue on Recent Advances in Communication and Internet Technology 2004
NetGames 2003 Program Committee
Reviewer IEEE Transactions on Computers 2002

Memberships in Professional Societies

USENIX, 2004–present.
ACM, 1994–present.
ACM SIGCOMM, 1994–present.
IEEE, 1992–present