

Yong Huang

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Objective

Full time position in research and development team related to wireless/networking systems (Available from October, 2008)

SUMMARY

- Highly motivated in research and development work
- 10 years programming experience, 8 years system administrator
- 5 years in modeling and developing network and wireless systems

EDUCATION

Univ. of Massachusetts, Amherst
Electrical and Computer Engineering Department,
Ph.D. Student, Research Assistant 09/2002-09/2008(est.)
Advisor: Weibo Gong, Co-advisor: Don Towsley GPA: 3.8/4
Thesis: "Improving Performance of 802.11 Wireless Infrastructure and Mesh Networks"

Xi'an Jiaotong Univ. (A top 10 school in China)
M.S. in Systems Engineering, Advisor: Xiaohong Guan 07/2002
Thesis: Power Market: Price Forecasting and Simulation (in Chinese)
GPA: 85.4/100 Rank: 2nd/28

B.S. in Information Science and Technology 07/1999
GPA: 88.0/100 Rank: 6th/62 (special program for top CEE students)

TECHNICAL SKILLS

- Programming Experience: C/C++, Perl, Shell script, Windows diver, TCP/IP, Matlab, NS-2, HTML, SQL database
- Operating systems: Windows, Linux/Unix
- Modeling and performance analysis
- Development Tools: Visual Studio, gcc, g++, WinDbg, gdb

SELECTD COURSEWORKS

Computer Networking (Lecturer: Jim Kurose, Grade: A); Performance Evaluation (Don Towsley, A), Optimal Control Systems (Weibo Gong, A-), Stochastic Control Dynamic System (Weibo Gong, A)

SELECTD PROJECTS

Wireless Area:

- **W1: How Network Coding Benefit TCP in a real 802.11 Wireless Mesh Network 09/2006-Now**
Implement network coding modular using C as Windows XP virtual driver to deploy network coding in a real wireless mesh network with 20 nodes. Measure and analyze network-coding benefit over TCP in a real wireless mesh networks.
- Sole developer of network coding modular into a Windows XP virtual driver at 2.5 layer using C

- Development with windows driver development kit. Trace analysis with tcpdump, perl, C and shell script

- **W2: Application Layer TCP Relay for Wireless Mesh Network 09/2005-09/2006**

Deploy a test bed of multi-hop wireless mesh network within two Engineering Buildings using Microsoft Mesh Connectivity Layer. Design and analyze TCP relay over wireless mesh network.

- Installation and maintenance of a real wireless mesh network with 10+ nodes
- Sole program developer with C++. Trace analysis using perl and C

- **W3: Multi-Channel Multi-Sector Directional Antennas WLAN, 09/2004-09/2005**

Design a TDMA based MAC to utilize multi-channel and multi-sector direction antennas to provide high bandwidth wireless LAN for enterprises. Propose a Lagrangian Relaxation based scheduling algorithm to provide good sub-optimal solutions quickly.

- **W4: Multi-Channel 802.11 Wireless LAN, 09/2004-03/2005**

Design a TDMA based MAC to utilize multiple non-overlapping 802.11a PHY channels to provide high bandwidth enterprise/home Wi-Fi networks. Design a Lagrangian Relaxation based channel time scheduling algorithm to provide good sub-optimal solutions quickly.

- Algorithm designer and software simulation developer
- C++, Cplex, Matlab
- Cooperated with Newlans Ltd. on MAC design for 802.15.3c alternate PHY layer; contributor to 802.15.3c standard draft

Modeling and Measurement Area:

- **M1: Modeling burstiness impact on Internet and its application, 02/2007-09/2007**

Develop a two-level Markov on-off model to consider the burstiness impact on a tandem queue from both the packet-level and application-level. An application of this analysis is to provide a fundamental proof for adopting traffic shaping and small buffer optical switch for next-generation Internet.

- **M2: Exploiting IPID Field in IP Header for Network Measurement, 07/2003-09/2004**

Use active and passive techniques to retrieve IPID field of IP packets to measure network path and end-system characteristics, including (a) amount of internal traffic generated by a server, (b) number of servers in a large scale, load-balanced server complex and (c) difference between one-way delays of two machines to a target computer.

- Main experiment designer and developer
- C++, perl, Linux and Windows implementation of IP
- Cooperated with network research group at Computer Science Dept. of U. Mass. Amherst

SELECT PUBLICATIONS

[1] Y. Huang, M. Ghaderi, D. Towsley, W. Gong, "TCP Performance in Coded Wireless Mesh Networks", to appear in proceedings of SECON 2008, San Francisco, June 16-20, 2008

- [2] Y. Huang, Y. Liu, W. Gong, D. Towsley, "Two-level Stochastic Fluid Tandem Queuing Model for Burst Impact Analysis", in proceedings of 46th IEEE Conference on Decision and Control, New Orleans, Dec. 12-14, 2007
- [3] T. Wolf, Y. Huang, W. Gong, Y. Cai, "On Network-Wide Packet Pacing", ECE Technical Report TR-08-CSE-07, under peer review
- [4] Y. Huang, W. Gong, D. Towsley, "Application layer relays for wireless 802.11 mesh networks", in proceeding of IEEE workshop WiMesh 2006, pg. 81-90, Reston, VA, Sep. 25, 2006
- [5] Y. Huang, W. Gong, D. Gupta, "MCMSDA: A Multi-Channel Multi-Sector Directional Antenna Wireless LAN", in proceeding of IEEE WOWMOM 2006, Buffalo, NY, 26-29 June 2006
- [6] Y. Huang, W. Gong, D. Gupta, "Architecture and scheduling algorithm for a multi-channel wireless infrastructure network with diversity management layer", in proceeding of 44th IEEE Conference on Decision and Control (CDC) and European Control Conference (ECC) 2005
- [7] W. Chen, Y. Huang, B. Ribeiro, K. Suh, H. Zhang, E. de Souza e Silva, J. Kurose, D. Towsley, "Exploiting the IPID field to infer network path and end-system characteristics", in proceedings of the sixth Passive & Active measurement Workshop, Boston, MA 2005
- [8] Henry H. Feng, J. T. Giffin, Y. Huang, S. Jha, W. Lee, and B. P. Miller, "Formalizing Sensitivity in Static Analysis for Intrusion Detection", in Proceedings of The 2004 IEEE Symposium on Security and Privacy, Oakland, CA, May 2004.

SELECT AWARDS

- 2000 - Excellent Graduate Student, Second-Class Xin-Xing Enterprise Scholarship
- 1998, 1997 - Third-Class Scholarship founded by Xi'an Jiaotong University
- 1996 - Excellent Student, Second-Class Scholarship founded by Xi'an Jiaotong University
- 1996 - First-Class Freshman Scholarship founded by Xi'an Jiaotong University

AFFILIATION

IEEE Student Member, IEEE Control Systems Society Member

REFERENCE:

Dr. Weibo Gong	Dr. Don Towsley
IEEE Fellow	IEEE Fellow
Professor of Electrical and Computer Engineering	Professor of Computer Science
Adjunct Professor of Computer Science	University of Massachusetts
University of Massachusetts Amherst	Amherst
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