

Ju Wang

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EDUCATION

- August 2003 **Ph.D, Computer Science, University of Florida.**
Advisor: Dr. Jonathan Liu
- July 1998 **M.S. Computer Sciences, Institute of Computation Tech,**
Chinese Academy of Sciences.
- July 1995 **B.S. Computer Sciences, Ocean University of Qingdao, P.R.C**

ACADEMIC APPOINTMENTS

- Aug 2003 - present Assistant Professor, Computer Science Department,
Virginia Commonwealth University

PREVIOUS EMPLOYMENT

- | | |
|--|--|
| University of Florida
Research Assistant
Lab Administrator | Gainesville, FL
August 1999- May 2003 |
| Washington State University
Teaching/Research Assistant | Pullman, WA
August 1998 - May 1999 |
| Chinese Academy of Sciences
Research Assistant | Beijing, China
July 1995 - July 1998 |

TEACHING INTERESTS

Programming Language
Algorithm
Operating Systems
Computer Networks and Wireless Systems
Computer Organization
Parallel and Distributed Systems

TEACHING EXPERIENCE

Undergraduate Level

- CMSC-245 C++ Programming (Fall 2005)
- CMSC-246 Advanced C++ Programming (Spring 2004, 2005, 2006)
- CMSC-311 Computer Organization (Fall 2004, 2005, 2006)
- CMSC-312 Operating Systems(Spring 2004, Spring & Fall 2007)
- CMSC-502 Parallel Programming (Spring 2006, Fall 2007)
- CMSC-506 Computer Networking (Spring 2005)

Graduate Level

- CMSC-502 Parallel Programming (Spring 2006, Fall 2007)
- CMSC-506 Computer Networking (Spring 2005)
- CMSC-602 Advanced and Distributed Operating Systems (Fall 2003, Fall 2006)
- CMSC-691 Wireless Networking (Spring 2007)

RESEARCH INTERESTS

Wireless Networking

- Characterizing the interference properties in wireless networks
- Optimal packet scheduling and channel allocations
- Resource allocation in wireless networks
- Network clustering algorithms in Adhoc wireless networks

Wireless Sensor Systems for Engineering Problems

- Embedded systems design
- Wireless sensor based infrastructure diagnostic system
- Wearable sensor device for patient monitoring

Distributed Multimedia Systems

- Video streaming
- Video watermarking
- Parallel computing
- High performance security gateway

JOURNAL PUBLICATIONS

In print

- [1] Ju Wang, Mbonisi Masilela, Jonathan C. L. Liu, "Transmission Buffer Management and Node Failure Recovery in Wireless Sensor Networks", *Mediterranean Journal of Computers and Networks*, Vol 4, No. 2, April 2008, pp.44-53.
- [2] J. Wang and J. Liu, "Uplink Relaying in Hybrid Wireless Networks with Interference Reduction", *ACM Journal of Wireless Networks*, ISSN 1022-0038 (Print) 1572-8196 (Online), 29 February, 2008.

- [3] H. Choi, J. Wang and E.A. Hughes, "Scheduling for Information Gathering on Sensor Network" *ACM Journal of Wireless Networks*, ISSN 1022-0038 (Print) 1572-8196 (Online), 1 August 2007.
- [4] J. Wang and J. Liu, "Optimizing Uplink Scheduling in An Integrated 3G/WLAN Network", *Special Issue of International Journal of Wireless and Mobile Computing (IJWMC) on The Integration of 3G and WLAN Networks*, 2(4), 2007, pp.288-302.
- [5] J.Wang, J. Liu, "Network Clustering and Interference Reduction in CDMA networks Using Mobile Relaying", *International Journal of Computer & Information Science*, Volume 7, No 1-4, 2006, pp.73-82.
- [6] J. Wang and J. Liu, "Uplink scheduling in clustered 3G network with mobile relaying", *International Journal of Parallel, Emergent and Distributed Systems*, Volume 21, Issue 6, 2006 , pp.441-463.
- [7] J. Wang and J. Liu, "Handoff Algorithms in Dynamic Spreading WCDMA System Supporting Multimedia Traffic," *IEEE Journal on Selected Areas in Communications*, vol.21 (10), Dec 2003, pp.1652-1662.
- [8] J. Wang, M. Elicin and J. Liu, "Multimedia Support for Wireless W-CDMA with Dynamic Spreading," *ACM Journal of Wireless Network*, No.8, 2002, 355-370.
- [9] Zhongzhi Shi, J. Wang and Hu Cao, "The Security Mechanism In Multi-Agent System AOSDE," *Lecture Notes in Computer Science*, Springer, Vol. 1733, Dec. 1999, pp.62-71.
- [10] Qianhong Pan, Ju Wang and Zhongzhi Shi, "Text Similarity Computing Based on Attribute Theory," *The Chinese Journal of Computers*, No.6, 1999, pp.653-655.

In Press

- [11] J.Wang, J. Liu and M. Mbonisi, "A Real-time Watermarking System with Buffer-sharing for On-demand Video Service," Special Issue on Circuits and Systems for Real-Time Security and Copyright Protection of Multimedia, *International Journal of Computers and Electrical Engineering (Elsevier Ltd.)*, accepted for publication. vol.22, 2008. pp. 651-655.
- [12] Ju Wang and Xiaorui Wang, "An Energy-Efficient, Distributed Wireless Multicast Protocol based on Concurrent CTS and N Connectivity", *ACM Journal of Wireless Networks*, provisionally accepted.

In Review

- [13] Ju Wang and Jonathan Liu, "Video Authentication Against Playback Attack in Wireless Network", *Journal of Security and Communication Networks*, submitted
- [14] Ju Wang and Hongsik Choi, "Channel Allocation in Large Scale Wireless Sensor Networks" *Computer Communications*, submitted.

BOOK CHAPTERS

- [15] J. Wang and J. Liu, "Resource Management for Multimedia Communication in Next-Generation CDMA Networks", book chapter of *Wireless Ad Hoc Networking*, CRC Press, 2006. pp 595-625.
- [16] J. Wang and J. Liu, "Advances of Radio Interface in WCDMA Systems", book chapter of *Encyclopedia of Multimedia Technology and Networking*, 2006, Idea Group Publishing.

CONFERENCE PROCEEDINGS

Refereed (acceptance based on peer review of the full paper)

- [17] J.Wang and J. Liu, "Video Authentication Against Correlation Analysis Attack in Wireless Network ," The 10th IEEE International Symposium on Multimedia (ISM 2008), Berkeley, California, 15-17 December 2008. (Acceptance rate: 24%)
- [18] J.Wang, M. Mbonisi and J. Liu, "Supporting Video Data in Wireless Sensor Networks," in Proc. of 9th IEEE International Symposium on Multimedia, 2007, pp 310-317. (Acceptance Rate: 24%)
- [19] J.Wang and J. Liu, "Analysis of a Fast Power Allocation Algorithm for Multiuser OFDM Systems," in Proc. of International Conference on Wireless Networks (ICWN 2007), pp 104-109. (Acceptance Rate: 27%)
- [20] Mbonisi Masilela, Ju Wang and Ramana M. Pidaparti, "Supporting Data-Intensive Wireless Sensor Applications using Smart Data Fragmentation and Buffer Management," in Proc. of 4th IEEE International Conference on Innovations in Information Technology, Dubai, 2007, pp.367-371. (2007 acceptance rate is unknown)
- [21] J. Wang, M. Mbonisi and J. Liu, "Distributed Retransmission Buffer Recovery at Node Failure in Sensor Networks", in Proceedings of Seventh IASTED International Conferences on Wireless and Optical Communications (WOC 2007), pp. 380-385. (Acceptance Rate: 45%)
- [22] J. Wang, Hong-sik Choi, Esther Hughes and Yong Tang, "Efficient Wireless Multicast Protocol with Orthogonal CTS Modulation Supporting Video Conferencing", in Proceedings of IEEE ICME 2006, pp148-153. (acceptance rate 22%)
- [23] Ju Wang, Hongsik Choi and Esther A. Hughes, "Efficient Route Establishment and Maintenance in Wireless Sensor Networks with Mobile Base Stations", *Proceedings of 44th ACM Southeast Conference (ACMSE 2006)*, March 2006, pp343-349. (acceptance rate 40%)
- [24] Ju Wang, Jeremy Cooper, and Hongsik Choi, "On the Channel Modelling and Transmission Power Control for Wireless Sensor Networks ", *Proceedings of 44th ACM Southeast Conference (ACMSE 2006)*, March 2006, pp792-793. (acceptance rate 40%)

- [25] J. Wang, "Performance Study of a Multicast Protocol for Wireless Sensor Networks based on N2 Connectivity", IEEE International Workshop on Computer Architecture for Machine Perception and Sensing, CAMPS06, pp148-153. (acceptance rate is unknown)
- [26] J. Wang and Jonathan C.L. Liu, "Content-Based Block Watermarking Against Cumulative and Temporal Attack", IEEE International Conference on Multimedia and Exposition 2005 (ICME 2005), pp.77-80. (Acceptance rate: 22%)
- [27] J. Wang and Jonathan C.L. Liu, "An Iterative Power Allocation Algorithm in OFDM System Based on Power Relaxation", IEEE International Conference on Multimedia and Exposition 2005 (ICME 2005), pp.73-76. (Acceptance rate: 22%)
- [28] J. Wang and J. Liu, "LA-CDMA: An Uplink Scheduling Approach in An Integrated 3G/WLAN Network with Relaying," *In Proc. of 25th ICDCS Workshops*, June, 2005, pp.558-564. (Acceptance rate: 25%)
- [29] J. Wang and J. Liu, "Interference Minimization And Uplink Relaying At 3G/WLAN," *IEEE SNPD/SAWN 2005*, pp 388-395. (14 accepted, acceptance rate: NA)
- [30] H. Choi, J. Wang, and E.A. Hughe, "Scheduling on Sensor Hybrid Network," *IEEE ICCCN 2005*, pp. 503-508. (Acceptance rate: 33%)
- [31] Ju Wang, Adrian R. Steele and Jonathan C.L. Liu, "Efficient Integration of Watermarking With MPEG Compression," *in Proceeding of IEEE International Conference on Multimedia and Exposition 2004 (ICME 2004)*, pp.27-30. (Acceptance rate: 30%)
- [32] Arun Abraham, Ju Wang and Jonathan C.L. Liu, "Bandwidth-Aware Video Encoding with Adaptive Image Scaling," *in Proceeding of IEEE International Conference on Multimedia and Exposition 2004 (ICME 2004)*, pp.157-160. (Acceptance rate: 30%)
- [33] J. Wang, Y. Cen and J. Liu, "Analysis of Soft Handoff Algorithms with Dynamic Spreading WCDMA System," *Proceedings of the 17th International Conference on Advanced Information Networking and Applications (AINA2003)*. (2003 acceptance rate is unknown; 2004 acceptance rate was 25%)
- [34] J. Wang, Y. He and J.C Liu, "Efficient Buffering Control for A Software-Only, High-Level, High-Profile MPEG-2 Decoder," *Proceedings of International Conference on Multimedia and Exposition 2003 (ICME 2003)*, vol. 3, Baltimore, July 2003, pp.489-492. (acceptance rate 50%)
- [35] N. Kamat, J. Wang and J.C Liu, "An Efficient Re-routing Scheme for Voice over IP" *Proceedings of International Conference on Multimedia and Exposition 2003 (ICME 2003)*, vol. 3, Baltimore, July 2003, pp.245 - 248. (acceptance rate 50%)
- [36] J. Wang, J. Liu and Y. Lin, "A Partition-based Parallel MPEG-2 Software Decoder," *Proceedings of Joint Conference of Information Systems*, Durham, North Carolina, Mar 2002, pp. 1009-1012. (2003 acceptance rate is unknown)
- [37] M. Elicin, J. Wang and J. Liu, "Support Multimedia Traffic over W-CDMA with Dynamic Spreading," *IEEE GLOBECOM 2001*, Vol 4, pp. 2384-2388. (Acceptance rate: 47%)

- [38] J. Wang and J. Liu, "Parallel MPEG-2 Decoding with High-Speed Networks," Proceedings of International Conference on Multimedia and Exposition 2001 (ICME 2001), Tokyo, Japan, Mar 2001, pp.449-452. (Acceptance rate: 30%)

Non-Refereed (acceptance based on review of an extended abstract)

- [39] Ashwin Bella, Ramana Pidarparti, and Ju Wang, "Portable Integrated Wireless Sensor System for Damage ", American Institute of Aeronautics and Astronautics 2008, Region I-MA Regional Student Conference, University of Maryland College Park College Park, MD April 11-12 2008.
- [40] Ramana Pidarparti, and Ju Wang, "Smart Wireless Diagnostic System Development for Structural Health Monitoring", American Institute of Aeronautics and Astronautics 2008, Region I-MA Regional Student Conference, John Hopkins University, 2007

TECHNICAL PRESENTATIONS

University Seminars

"Smart Wireless Diagnostic System Development for Structural Health Monitoring", American Institute of Aeronautics and Astronautics 2008, Region I-MA Regional Student Conference, John Hopkins University, 2007.

Supporting Multimedia Traffics In Dynamic Spreading Enabled CDMA network, Research Seminar, Virginia Commonwealth University, Richmond, VA, March 2003.

Supporting Multimedia Traffics In Dynamic Spreading Enabled CDMA network, Research Seminar, University of Alabama, Tuscaloosa, AL, March 2003.

Supporting Multimedia Traffics In Dynamic Spreading Enabled CDMA network, Research Seminar, Delaware State University, Dover, DL, March 2003.

Conference Presentations

"Distributed Retransmission Buffer Recovery at Node Failure in Sensor Networks" Seventh IASTED International Conferences, Montreal, Canada, June 2007.

"Efficient Route Establishment and Maintenance in Wireless Sensor Networks with Mobile Base Stations", 44th ACM Southeast Conference (ACMSE 2006), Florida, March 2006.

"On the Channel Modelling and Transmission Power Control for Wireless Sensor Networks ", 44th ACM Southeast Conference (ACMSE 2006), Florida, March 2006.

"LA-CDMA: An Uplink Scheduling Approach in An Integrated 3G/WLAN Network with Relaying," 25th IEEE ICDCS Workshops, Columbus, OH, June, 2005.

"Interference Minimization And Uplink Relaying At 3G/WLAN," IEEE SNPD/SAWN 2005, Towson, MD, May, 2005.

“Analysis of Soft Handoff Algorithms with Dynamic Spreading WCDMA System,” 17th International Conference on Advanced Information Networking and Applications, Xian, China, May, 2003.

“Efficient Buffering Control for A Software-Only, High- Level, High-Profile MPEG-2 Decoder,” International Conference on Multimedia and Exposition 2003 (ICME 2003), Baltimore, MD, July 2003.

“An Efficient Re-routing Scheme for Voice over IP”, International Conference on Multimedia and Exposition 2003 (ICME 2003), Baltimore, MD, July 2003.

”A Partition-based Parallel MPEG-2 Software Decoder,” Joint Conference of Information Systems, Durham, North Carolina, Mar 2002.

FUNDED PROJECT

Principle Investigator, “High Linear Analog Communication on a 1550 Fiber-Optic Link: Performance Evaluation” , , \$15,000, Hangzhou Tongxing Electron Co, 2008.

EQUIPMENT DONATION

Two 1550nm Externally Modulated Optical Transmitter and Receiver, \$20,000, Hangzhou Tongxing Electron Co, 2006.

CONSULTING

Consultant, Microprocessor Based Bias Control for 1550 nm External Modulator, \$3000, Hangzhou Tongxing Electron Co, 2006.

INVENTION DISCLOSURES

Wang, J., High Performance, Integrated Network Content Security Appliance, VCU disclosure, November 2007.

GRADUATE STUDENT RESEARCH SUPERVISION

Masters Thesis Advisor

Qi Li, “Video Data Transportation in Wireless Sensor Networks”, M.S. Computer Science, Expected graduation Dec 2008.

Ashwin Bella, “Wireless Sensor Networks in Infrastructure Health Monitoring”, M.S. Computer Science, Expected graduation Dec 2008.

Paras Ghandi, “Real Time Packet Screening: A Signature Based Approach”, M.S. Computer

Science, Expected graduation Dec 2008.

Mbonisi Masilela, “Supporting Data-Intensive Wireless Sensor Applications using Smart Data Fragmentation and Buffer Management ”, M.S. Computer Science, Dec 2007.

Chris Kuhlman, “A Message Oriented Middleware Inter-Process Communications Library: Design, Development, and Validation”, M.S. Computer Science, May 2007.

Payal Ajwani, “Reliable Multicast Protocol with Orthogonal CTS for Wireless Ad-Hoc Networks”, M.S. Computer Science, Dec, 2004.

Thesis Committee Member

Mircea Lazea, M.S. Thesis Committee, M.S. Biomedical Engineering, Dec 2007.

Richard Stutler, “Analysis of Perturbation-based Testing Methodology as applied to a Real-Time Control System Problem”, M.S., Computer Science, 2004

Quan Cheng, “The Development of an FPGA-based Autopilot for Unmanned Aerial Vehicles Electrical Engineering”, M.S. Computer Engineering, 2006

Jeremy Copper, M.S. Thesis Committee, M.S. Computer Engineering, Expected graduation 2009.

UNDERGRADUATE RESEARCH AND INTERNSHIPS SUPERVISED

“Design of a Portable Corrosion Detector”, Mechanical Engineering Senior Design, with Dr. R. Pidaparti, 2008.

Jeremy Copper, “On the Channel Modelling and Transmission Power Control for Wireless Sensor Networks”, Independent Study, 2006.

George Davis Webster III, “The Study of Low Level Security in Computer Systems”, Independent Study, Fall, 2006.

REVIEWER FOR JOURNALS

IEEE Communication Letters, 1 manuscript, 2008

Journal of Visual Communication and Image Representation, 1 manuscript, 2008

Computer Communications, 3 manuscript, 2007-2008

EURASIP Journal on Advances in Signal Processing, 1 manuscript, 2007

Wireless Communications and Mobile Computing, 3 manuscripts, 2006-2007

IEEE Trans. Comm., 1 manuscript, 2005

IEEE Transactions on Multimedia, 1 manuscript, 2005

IEEE Trans. Wireless Comm. 1 manuscript, 2004.

REVIEWER FOR GRANT PROPOSALS

NSF NOSS Panel on Protocols, Algorithms, Programming and Data Processing, 2007.
NSF Partnership For Innovation (PFI) Review Panel 2004.
NSF Information Technology Research (ITR) Review Panel, 2004.

CONFERENCES AND SYMPOSIUMS ORGANIZED

- Technical Program Committee member, IEEE INFOCOM 2009
- Technical Committee Members, Wireless Communications and Networking (WCN) Symposium of CHINACOM 2008
- Program Committee member, IASTED International Conference on Sensor Networks (SN 2008)
- Program Committee member, The 9th Conference on Computing (CORE 2008)
- Program Committee member, ICC'08 - Information and Network Security Symposium
- TPC member, Ad Hoc and Sensor Networking Symposium of the 50th Annual IEEE Globecom Conference (GLOBECOM 07)
- Program Committee member, ICC'06 - Information and Network Security Symposium
- Co-chair of Special Session on IASTED International Conference on Sensor Networks (SN 2006)
- Program Committee member, The 9th ACIS International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD2008)

UNIVERSITY-LEVEL SERVICE

University-Level Committees

VCU Provost Search Committee, May 2004

SCHOOL-LEVEL SERVICE

Provided lab demos at several Engineering School Open Houses
and other events, 2003-present

Conducted lab tours of the Engineering Building, 2003-present

Assisted with student recruiting by calling prospective students, 2003-2006

DEPARTMENT-LEVEL SERVICE

Department-Level Committees

Computer Science Graduate Committee, 2003-2005
Computer Science Undergraduate Committee, 2006-present
Computer Science M.S. in Security Program Committee

Undergraduate Advising

Academic advisor for an average of 26 undergraduate students per semester, 2003-present
Provided recommendation letters and phone references for several SOE students, 2003-present

Other Department-Level Service

Evaluate and ordered hardware lab kit for the new Lab portion of CMSC311 course, 2004
Evaluator for Student Summer Internship presentations, Fall 2004 and 2005
Assisted verifying and update department website with new program curriculum, 2007
Assisted Dr. Brilliant and Dr. Parker creating the BS/MS 5-year program, Spring 2007

PROFESSIONAL DEVELOPMENT

Faculty Mentoring Program, VCU Center for Teaching Excellence, 2004-2005

PROFESSIONAL SOCIETIES

Member of IEEE ComSoc Radio Communications Committee, 2007-present
Institute of Electrical and Electronic Engineers IEEE, 2002-present