

Yusun Chang
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SELECTED SUMMARY OF QUALIFICATIONS

Education

Ph. D. Georgia Institute of Technology
M.S. Columbia University
B.S. Korea Aerospace University

Scholarly Activities

1. Published book, "Robust Mobile Networking," VDM, ISBN: 3639094751, Nov. 2008.
2. 22 technical papers (two IEEE JSAC of 4.2 impact factor, 1st in Telecommunication, 2nd in entire Electrical Engineering journals)
3. Organizing 10 IEEE conferences as a member of Technical Program Committees (TPC)
4. Reviewed 22 different major publications
5. Project discussion meeting at January 2012, Georgia Dept. of Transportation (\$298,797 for 3 years)

Experience

1. Assistant Professor at Southern Polytechnic State University (2010~Present)
2. Adjunct Professor at Georgia Institute of Technology (2011~Present)
3. Teaching 11 courses with 4 new courses developed in 4 semesters
4. ABET Accreditation Preparation and Curriculum Development
5. Faculty Search Committee and Undergraduate Student Committee
6. Bell Laboratories & Samsung IP Labs
7. Chief instructor at Korea Air Force

Award and Leadership

1. Vice Chairman of KCRC, Korean Council for Reconciliation and Cooperation (Present)
 2. Founder & President, The Atlanta Korea Forum, Atlanta, GA. U.S.A. (Present)
 3. Local Fundraiser, The Triad Track-II Seminar on Peace-Building and Reintegration of the Korean Peninsula, University of Georgia (UGA)
 4. People's Choice Award, Georgia Institute of Technology
 5. 1st Prize, Annual Teaching Competition '97, Korea Air Force
 6. President, Korean Student Association, Georgia Institute of Technology
 7. Senator, Student Government Association, Georgia Institute of Technology
 8. Founder, Tie-Breakers tennis club, Columbia University
 9. Honorary committee member of the 96th Officer's Candidate, Korea Air Force
 10. President, Al-fine Classic Guitar, Korea Aerospace University
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RESEARCH INTERESTS

Sustainable Mobile Networking, Sensor Networks, Intelligent Transportation Systems, Remote Robotic Surgery (Telesurgery)

EDUCATION

Ph. D., Electrical and Computer Engineering, Georgia Institute of Technology, Dec 2007.

(Advisor: Dr. John A. Copeland)

Dissertation Title: “Dynamic Optimal Fragmentation with Rate Adaptation in Wireless Mobile Networks.” In the dissertation, the proposed algorithm optimizes goodput in wireless mobile networks. Various real world experiments are performed and analyzed for channel estimation, WLANs, Ad hoc networks, Vehicle-to-Vehicle, and Multimedia Ad hoc networks.

Minor in Computer Science

M.S., Electrical Engineering, Columbia University, May 2002.

(Advisor: Dr. Richard D. Gitlin)

M.S., Electrical Engineering, Korea Aerospace University, Korea, Aug 1995.

(Advisor: Dr. Kang. W. Lee)

Thesis Title: “A Study on the Fuzzy Inference Adaptive Control of Robot Manipulators.” In the thesis, Fuzzy Inference Control Algorithm is design and evaluated to control nonlinear Robot System.

B.S., Electrical Engineering, Korea Aerospace University, Korea, Feb 1993.

EXPERIENCE

Research Experience

1. Assistant Professor

Electrical Engineering, Division of Engineering, Southern Polytechnic State University (August 2010 – Present)

- Direct Sustainable Mobile Networking Group to design and Implement effective communication protocols for vehicular ad- hoc networks (VANETs) and ITS applications
- Research on wireless remote robotic surgery to provide innovative solutions

2. Adjunct Professor

Communications Systems Center, School of E.C.E, Georgia Institute of Technology (August 2011 – Present)

- Supervise Vehicular Networking Group and perform researches in wireless mobile networking

3. Visiting Professor

Communications Systems Center, School of E.C.E, Georgia Institute of Technology (August 2010 – July 2011)

4. Post Doctoral Scholar

Communications Systems Center, School of E.C.E, Georgia Institute of Technology (Jan 2008 – July 2010)

- Lead the Vehicular Networking Group to design and Implement effective Multimedia Communication Protocols for vehicular ad- hoc networks (VANETs) and ITS applications
- Supervise three Ph. D. students (Sungjin Park, Pan Joe, Faisal Khan) and collaborate with a visiting faculty (Dr. SeogJoo Shin)

5. Graduate Research Assistant

1. *Communications Systems Center, Georgia Institute of Technology (Jan. 2003 - Dec. 2007).*

- Developed protocols to enhance performance of vehicular mobile communications and networking using optimal fragmentation technique with transmission rate adaptation

2. *Control Lab, Electrical Engineering, Korea Aerospace University, Korea. (Aug. 1993 - Mar. 1994)*

- Implemented a Digital Controller using MC68000 processors for the Turbo-Jet Engine control

6. Research Intern

IP Labs, TN Group, Samsung Electronics, Seoul, Korea (May 2003 - July 2003).

- Researched the impact of network parameters and Performance of TCP in 3G wireless networks

7. Researcher

1. *Bell Laboratories, Networking Software Research Dept., Holmdel, NJ (May 2002 - Aug. 2002).*

- Researched VPN algorithm and modeled mobility topology for fast handoff in 3G System

2. *Kumkyung Electric and Control Research Laboratories, Seoul, Korea. (July 1995 - Oct. 1995)*

- Researched and developed traffic signal controllers for urban transportation system

Teaching Experience

1. Assistant Professor

Electrical Engineering, Division of Engineering, Southern Polytechnic State University, Marietta, Georgia. (August 2010 - Present)

- Communications Systems (EE3702: Fall 2011)
- Digital Logic Design (EE2501: Fall 2011, Summer 2011, Spring 2011, Fall 2010)
- Electric Machines (EE3601: Fall 2011, Summer 2011, Spring 2011, Fall 2010)

2. Adjunct Faculty

Dept. of Computer Science and Software Engineering, Southern Polytechnic State University, Marietta, Georgia. (Jan. 2009 – July 2010)

- Digital Design (CS2223: Spring 2009)
- Computer Architecture (CS5223: Spring 2010)

3. Mentor

Opportunity Research Scholars Program, Georgia Institute of Technology. (Aug. 2008 – May 2009)

- Mentored qualified undergraduate students to promote their potential in research projects

4. Chief Instructor

Air Defense Artillery School, Republic of Korea Air Force. (Mar. 1996 - Jun. 1999)

- Taught Mistral Weapon Systems and Surface-to-Air Missile Systems for air force officers

- Revised and published the official Korean Air Force technical manuals

5. Lecturer

Sudo Electrical & Telecommunication Academy, Seoul, Korea. (Dec. 1993 - Mar. 1995)

- Taught Circuit Theory, Electromagnetic, Electronics, Control System Engineering and Communication Systems for students preparing to qualify for a national certificate (Engineer-in-Training, Professional Engineer equivalent)

6. Teaching Assistant

Control System Engineering Lab, Dept. of Avionics Engineering, Korea Aerospace University. (Mar. 1994 - Aug. 1994)

- Assisted teaching and grading for undergraduate students in Electromagnetic and telecommunications

PUBLICATIONS

Books

Yusun Chang, "Robust Mobile Networking," VDM, ISBN: 3639094751, Nov. 2008.

Journals

Published/Accepted Journals

1. P. Zhou, **Yusun Chang**, and J. Copeland, "Learning through Reinforcement for Repeated Power Control Game in Cognitive Radio Networks," will be published at *IEEE Journal on Selected Areas in Communications*, Jan. 2012.
2. **Yusun Chang**, C. Lee and J. Copeland, "Goodput Enhancement of VANETs in Noisy CSMA/CA Channels," the *IEEE Journal on Selected Areas in Communications*, Vol. 29, No. 1, Jan. 2011.
3. S. Pudasaini, **Yusun Chang**, and S. Shin, "A Reactive Cross Collision Exclusionary Backoff Algorithm in IEEE 802.11 Network," the *KSII Transactions on Internet and Information Systems*, Vol. 4, No. 6, Dec. 2010.

Conferences

Published/Accepted proceedings

1. F. Khan, **Yusun Chang**, S. Park, and J. Copeland, "Introducing Lane Based Sectoring for Routing in VANETs," accepted to *IEEE Wireless Communications and Networking Conference (WCNC)*, 2012.
2. S. Park, **Yusun Chang**, S. Shin and J. Copeland, "Throughput Enhancement of MANETs: Packet Fragmentation with Hidden Stations and BERs," accepted to *IEEE Consumer Communications and Networking Conference (CCNC)*, 2012.
3. F. Khan, **Y. Chang**, S. Park, and J. Copeland, "Handshaking vs. instant broadcast in VANET safety message routing," in *Proceedings of IEEE PIMRC'11*, October 2011.
4. P. Zou, **Yusun Chang** and J. Copeland, "Asynchronous Power Control Game with Channel Outage Constraints in Cognitive Radio Networks," the *IEEE ICC*, Tokyo, June 2010.
5. P. Zou, **Yusun Chang** and J. Copeland, "Capacity and Delay Scaling in Cognitive Radio Ad Hoc Networks: Impact of Primary User Activity," the *IEEE Globecom*, Miami, Dec. 2010.
6. P. Zou, **Yusun Chang** and J. Copeland, "Learning Through Reinforcement for Repeated Power Control Game in Cognitive Radio Networks," the *IEEE Globecom*, Miami, Dec. 2010.

7. **Yusun Chang**, M. Lee and J. Copeland, "Robust Real-time Multimedia Transmissions in Wireless Ad hoc Networks," *Proceeding of the IEEE International Symposium on Multimedia*, San Diego, Dec. 2009.
8. **Yusun Chang**, M. Lee and J. Copeland, "An Adaptive On-demand Channel Estimation for Vehicular Ad Hoc Networks," *Proceeding of the IEEE CCNC*, Las Vegas, Jan. 2009.
9. B. Kwon, **Yusun Chang**, Selcuk Uluagac, and John Copeland, "A Network Entry Protocol and OFDMA Symbol Allocation Scheme for Non-Transparent Relay Stations in IEEE 802.16j Networks," *Proceeding of the IEEE MILCOM 2008*, San Diego, Nov. 2008.
10. **Yusun Chang**, Christy M. Jeon, "Improving Vehicular Communications using Optimal Fragmentation Techniques," *Proceedings of the 10th International Conference on Application of Advanced Technology in Transportation 2008*, Athens, May 2008.
11. **Yusun Chang**, Chris Lee and John A. Copeland, "Goodput Optimization in CSMA/CA Wireless Networks," *Proceedings of the IEEE BROADNETS '07*, Raleigh, NC, Sep. 2007.
12. B. Kwon, Chris Lee, **Yusun Chang** and J. Copeland, "A Security Scheme for Centralized Scheduling in IEEE 802.16 Mesh Networks," *Proceedings of the IEEE MILCOM '07*, Orlando, Oct. 2007.
13. **Yusun Chang**, Chris Lee, B. Kwon and J. Copeland, "Dynamic Optimal Fragmentation with Rate Adaptation for Goodput Enhancement in WLANs," *Proceedings of the International Conference on Wireless Networks '07*, Las Vegas, June 2007, pp. 12-pp.17.
14. **Yusun Chang**, Chris Lee, B. Kwon and J. Copeland, "Dynamic Optimal Fragmentation for Goodput Enhancement in WLANs," *Proceedings of the IEEE TridentCom '07*, Orlando, May 2007.
15. **Yusun Chang**, Chris Lee and J. Copeland, "Optimal Fragmentation for Goodput Enhancement in IEEE 802.11 WLANs," *Proceedings of the IASTED CIIT '06*, Nov. 2006, pp. 265- pp.270.
16. E. Shim, H. Wei, **Yusun Chang**, and R. Gitlin, "Low Latency Handoff for Wireless IP QOS with NeighborCasting," *Proceedings of the IEEE ICC '02*, Apr. 2002, pp. 3245-pp.3249.
17. **Yusun Chang**, K. W. Lee, "A Study on the Fuzzy Inference Adaptive Control of Robot Manipulators," *Proceedings of the Conference on Control, Automation and Systems Engineering*, Apr. 1995, pp. 226-pp.229.
18. J. Back, **Yusun Chang**, "Parallel Extended Local Feature Extraction On Distributed Memory Computer," *Proceedings of the International Conference on MFI' 94*, Oct. 1994, pp. 128-pp.135.
19. Mistral Weapon System, *training and doctrine manuals*, Artillery School, Korea Air Force, Apr. 1998.

FUNDING

Title:	Improving Traffic Safety and Sustainability in Transportation Systems using Vehicular Network Technology, Project meeting is scheduled on January 2012.
Sponsor:	GDOT (Georgia Department of Transportation)
Cost Estimate:	\$298,797 for 36 months
Investigator(s):	Yusun Chang (PI)
Agency:	Southern Polytechnic State University

AWARD AND LEADERSHIP

1. **Vice Chairman of KCRC**, Southeast Chapter, Korean Council for Reconciliation and Cooperation, Feb. 2011~ Present.

2. **Local Fundraiser**, The Triad Track-II Seminar on Peace-Building and Reintegration of the Korean Peninsula, University of Georgia, Oct. 2011
3. **Advisor**, Tathagata Buddhist Student Association at Georgia Institute of Technology, Sep. 2010~Present.
4. **Founder/President**, The Atlanta Korea Forum, Atlanta, GA. U.S.A. March 2010~Present.
5. **People's Choice Award**, Best Research Poster voted by fellow Scholars at the Georgia Institute of Technology, April 2009.
6. **President**, Korean Student Association, Georgia Institute of Technology, Sept. 2006-Sept. 2007.
7. **Senator**, Student Government Association, Georgia Institute of Technology, Sept. 2003-May 2004.
8. **Founder**, Tie-Breakers tennis club, Columbia University, New York, NY. U.S.A. Sept. 2001.
9. **Honorary committee member of the 96th Officer's Candidate**, Korea Air Force Educational Command, Korea Air Force, Mar. 1996.
10. **1st Prize**, Annual Teaching Competition '97, Korea Air Force Educational Command, Korea Air Force, Oct. 1997.
11. **President**, Al-fine Classic Guitar, Korea Aerospace University, Korea, Mar. 1991-Sept. 1992.

PROFESSIONAL SERVICE

Service to the Programs and Universities

1. **Undergraduate Student Status Committee**, Division of Engineering, Southern Polytechnic State University, Fall 2011.
2. **Faculty Search Committee**, Electrical Engineering, Southern Polytechnic State University, Spring 2010.

Service to the Professional Societies

Technical Program Committee

1. **IEEE CCNC**, *IEEE Consumer Communications and Networking Conference, 2012.*
2. **IEEE ICCCN**, *IEEE International Conference on Computer Communications and Networks, 2011.*
3. **IEEE GlobeCom**, *Global Communications Conference, 2011.*
4. **IEEE IWCMC**, *IEEE International Wireless Communications and Mobile Computing Conference, 2011.*
5. **IEEE CCNC**, *IEEE Consumer Communications and Networking Conference, 2011.*
6. **IEEE IWCMC**, *IEEE International Wireless Communications and Mobile Computing Conference, 2010.*
7. **IEEE CCNC**, *The IEEE Consumer Communications & Networking Conference, 2010.*
8. **IEEE TridentCom**, *The 5th IEEE International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities, 2009.*
9. **IEEE IWCMC**, *The 5th International Wireless Communications and Mobile Computing Conference, Computer and Network Security Symposium, 2009.*
10. **FOWANC**, *ACM International Workshop on Foundations of Wireless Ad Hoc and Sensor Networking and Computing, 2009.*
11. **IEEE WiNA**, *The 2nd IEEE International Workshop on Wireless Network Algorithm and Theory, 2009.*

Session Chair

1. **IEEE ISM** *IEEE International Symposium on Multimedia, San Diego, 2009.*
2. **IEEE CCNC** *IEEE Consumer Communications & Networking Conference '09, Las Vegas. 2009.*

3. **ICWN** *International Conference on Wireless Networks '07, Las Vegas, 2007.*

Academic Publication Review

1. **IEEE CCNC**, *IEEE Consumer Communications and Networking Conference, 2012*
2. **IEEE Transactions on Wireless Communications**, 2011
3. **IEEE Transactions on Vehicular Technology**, 2011.
4. **IEEE GlobeCom**, *IEEE Global Communications Conference, 2011.*
5. **IEEE IWCMC**, *IEEE International Wireless Communications and Mobile Computing Conference, 2011.*
6. **IEEE ICCCN**, *IEEE International Conference on Computer Communications and Networks, 2011.*
7. **IEEE CCNC**, *IEEE Consumer Communications and Networking Conference, 2011.*
8. **IEEE JSAC**, *IEEE Journal on Selected Areas in Communication, 2010.*
9. **IEEE IWCMC**, *IEEE International Wireless Communications and Mobile Computing Conference, 2010.*
10. **CyberC**, *International Conference on Cyber-Enabled Distributed Computing and Knowledge Discovery, 2010.*
11. **IEEE CCNC**, *IEEE Consumer Communications and Networking Conference, 2010.*
12. **IEEE MASS**, *IEEE International Conference on Mobile Ad-hoc and Sensor Systems, 2009.*
13. **IEEE WiNA**, *The 2nd IEEE International Workshop on Wireless Network Algorithm and Theory, 2009.*
14. **FOWANC**, *ACM International Workshop on Foundations of Wireless Ad Hoc and Sensor Networking and Computing, 2009.*
15. **IEEE TridentCom**, *The 5th IEEE International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities, 2009.*
16. **IEEE IWCMC**, *The IEEE International Wireless Communications and Mobile Computing Conference, 2009.*
17. **The IEEE Communication Magazine**, 2008.
18. **The Wireless Communications and Mobile Computing Journal**, 2008.
19. **The Journal of Computer Systems, Networks, and Communications**, 2008.
20. **IEEE MILCOM**, *The IEEE Military Communications Conference, 2008.*
21. **IEEE MASS**, *The IEEE International Conference on Mobile Ad-hoc and Sensor Systems, 2008.*
22. **IEEE ICC**, *The IEEE International Conference on Communications, 2006.*