

KYUNG JOON KWAK

CONTACT INFORMATION	Address : 500 west 120 TH st., #1312, New York, NY 10027 Office phone : 212-854-6900 Mobile phone : 718-619-6677 Email : kjkwak@ee.columbia.edu Homepage : http://www.ee.columbia.edu/~kjkwak Visa Status : U.S. Permanent Resident (Green card holder)
RESEARCH INTERESTS	Applied topics of wireless/wired network protocols, distributed network algorithms, scheduling algorithms, network optimization, and its implementation in wireless ad-hoc and sensor network.
EDUCATION	Columbia University, New York, NY Ph.D. , Electrical Engineering, October 2008. Thesis Title: Minimalist Detection and Counting Protocols in Wireless Sensor Networks. Advisor: Professor E. G. Coffman, Jr. Master of Philosophy , Electrical Engineering, May 2007. Columbia University, New York, NY Master of Science , May 2005. GPA: 3.67/4.00 Major: Electrical Engineering, Concentration: Wireless and Mobile Networking. Yonsei University, Seoul, South Korea Bachelor of Science , Magna Cum Laude, February 2004. GPA: 3.6/4.00 Major: Electrical Engineering.
WORKING EXPERIENCES	Bell Laboratories, Alcatel-Lucent , Murray Hill, NJ Research Collaborator February 2007 ~ June 2008 <ul style="list-style-type: none">Participating in STOMP project initiated from DARPA in which aims to develop the global theory of sensing that reduces the sensing complexity of problems across DoD applications involving sensor networks and autonomous systems in detection scheme along with sleep scheduling, counting and localization protocol . Columbia University, Department of Electrical Engineering , New York, NY Research Assistant June 2005 ~ December 2007 <ul style="list-style-type: none">Participated in Armstrong project initiated from ARO/NSF to developed a new energy-efficient solicitation based forwarding protocol (SOFA) which functions as both MAC and Routing protocol. SOFA was implemented both in NS-2 and MICA2 mote.Participated in designing a new retransmission scheduling scheme in Optical Burst Switched network with optical fiber delay lines when the number of such core nodes are limited and new facility location model was introduced to optimize the performance. This scheme was implemented in NS-2. Information and Communication Research Lab, LG Electronics , Seoul, South Korea Summer Intern Summer 2005 <ul style="list-style-type: none">Participated in developing home network UPNP QOS version 2 & version 3.Implemented user interface between home network server and UPNP printer. Columbia University, Department of Electrical Engineering , New York, NY Teaching Assistant <ul style="list-style-type: none">ELEN E4711 Communication Theory. Fall 2006, Fall 2005ELEN E3822 Introduction to Communication System. Spring 2006ELEN E6711 Stochastic Processes in Information System. Fall 2008, Fall 2007 U.S. ARMY, 2nd Infantry Division, 122nd Signal Battalion , Uichongbu, South Korea Sergeant March 1999 ~ May 2001 <ul style="list-style-type: none">As a senior operator and team chief of 6 men team, completed 2-years obligatory military service in supporting high quality wireless communication service for two star generals as well as high rank officers by using U.S Army MSE wireless mobile communication system.Received U.S. Army commendation medal for the dedicated service.

PUBLICATIONS

Journals

Kyung Joon Kwak, Yuliy Baryshnikov, and Coffman, E.G., Jr.,
“Self-assembling sweep-and-sleep sensor system”.
ACM SIGMETRICS Performance Review, August 2008, Vol. 36, Issue 2.

Yuliy Baryshnikov, Coffman, E.G., Jr., Kyung Joon Kwak, and Bill Moran.
“Minimalist counting in sensor networks: Unexpectedly, noise is useful”.
International Journal of Distributed Sensor Networks. Under review. (Invited paper)

Kyung Joon Kwak, and Coffman, E.G., Jr.,
“Retransmission scheme in OBS network with fiber delay lines”.
In submission.

Conferences

Seoung-Bum Lee, Kyung Joon Kwak, and Andrew Campbell.,
“Solicitation-based forwarding for sensor networks”.
IEEE Communications Society conference on Sensor and Ad Hoc Communications and Networks,
2006. SECON '06. Vol. 1, page: 90-99

Kyung Joon Kwak, and Coffman, E.G., Jr.
“Retransmission in OBS network with fiber delay lines”.
International Conference on Broadband Communications, Networks, and Systems. IEEE
BROADNETS '07

Yuliy Baryshnikov, Coffman, E.G., Jr., and Kyung Joon Kwak,
“High performance sleep-wake sensor system based on cyclic cellular automata”.
International Conference on Information Processing in Sensor Networks. ACM/IEEE IPSN '08
(Authors in alphabetical order)

Kyung Joon Kwak, Yuliy Baryshnikov, and Coffman, E.G., Jr.,
“Cyclic cellular automata: A tool for self-organizing sleep scheduling for sensor networks”.
(Demo Paper). International Conference on Information Processing in Sensor Networks.
ACM/IEEE IPSN '08.

Yuliy Baryshnikov, Coffman, E.G., Jr., Kyung Joon Kwak, and Bill Moran.
“Stochastic counting in sensor networks, or: noise is good”.
International Conference on Distributed Computing in Sensor Systems. IEEE DCOSS '08. (Authors in
alphabetical order)

Kyung Joon Kwak, Yuliy Baryshnikov, and Coffman, E.G., Jr.,
“Self-organizing sleep-wake sensor system”.
International Conference on Self-Adaptive and Self-Organizing Systems. IEEE SASO '08

Kyung Joon Kwak, Yuliy Baryshnikov, and Coffman, E.G., Jr.,
“Minimalist localization protocol in wireless sensor networks”.
In submission.

PROFESSIONAL ACTIVITIES

- Reviewer, IEEE Conference on Wireless Communications and Networking
- Reviewer, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications
- Reviewer, International Conference on Communications and Networking in China
- President, Columbia University Korean Engineering Students Association (2005–2008)
- President, Columbia University Korean Electrical Engineering Students Association (2005–2008)
- Member of IEEE
- Member of Korean Scientist and Engineer Association
- Member of COMET (Columbia Multimedia Network) group.
- Member of MASA (Modeling and Analysis of Self-Assembly) group.

- TALKS
- “CA-based sleep wake protocol in sensor networks”, City College of New York, December 2008
 - “Stochastic counting in sensor networks, or: noise is good”, DCOSS, June 2008
 - “Cyclic cellular automata: A tool for self-organizing sleep scheduling for sensor networks”, IPSN, April 2008
 - “High performance sleep-wake sensor system based on cyclic cellular automata”, IPSN, April 2008
 - “Retransmission in OBS network with fiber delay lines”, BroadNets, September 2007
 - “Target enumeration via Euler characteristics.”, Bell Labs, August 2007

SKILLS

Languages: Fluent in both English and Korean
Computer Languages: C, C++, JAVA, HTML
Operating Systems: Windows, Unix/Linux, Mac OS
Software: Matlab, Network Simulator-2, Octave, Coffee Cup, Eclipse, etc

COURSES

Communications and Networks : Communication Theory, Wireless Communication, Wireless Communication and Mobile Network, Analog Communication, Digital Communication, Network performance evaluation, Wireless Local Area Networking, Computer Communications and Networks, 4G Wireless Networks, etc

Mathematics : Advanced math, Linear algebra, Numerical analysis, Probability and random process, Modeling and performance analysis, Stochastic modeling 1, Stochastic modeling in info system, Graph theory, Intro. to computational complexity, Algorithm and computational complexity, etc

REFERENCES

Prof. Edward. Coffman. Jr. (Academic Advisor) Department of Computer Science New York, NY, USA (212) 854-2152 coffman@cs.columbia.edu	Dr. Yuliy. Baryshnikov (Academic Co-advisor) Bell Laboratories, Alcatel-Lucent Murray Hill, NJ, USA (908) 582-3839 ymb@research.bell-labs.com
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(More references can be provided upon request.)