Kyung Hwa Kim

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EDUCATION

- **Columbia University,** Graduate School of Arts and Sciences, New York, NY
  Ph.D. candidate in Computer Science, degree expected in May 2015
  Advisor: Professor Henning Schulzrinne

- **Columbia University**, Graduate School of Arts and Sciences, New York, NY
  M.S. in Computer Science, May 2009

- **KAIST (Korea Advanced Institute of Science and Technology)**, Daejeon, South Korea
  B.S. in Computer Science, Feb 2007, Magna Cum Laude

RESEARCH

Columbia University, Department of Computer Science
Graduate Research Assistant, Internet Real-Time (IRT) Laboratory

- **AWIC**: "A Walk in The Cloud"
  Proposed new network architecture for a fine-grained cloud computing model that utilizes Software-Defined Networking (SDN) for container-based cloud. Designed and implemented virtualized network address architecture using OpenFlow.

- **WiSlow**: "Why is my Wi-Fi slow?" - A Wi-Fi network performance analysis tool for end users.
  Investigated the characteristics of different sources that can degrade Wi-Fi performance, and developed software that analyzes packet loss and 802.11 ACK number patterns to diagnose the root causes of poor Wi-Fi performance. Also, it uses peer collaboration to identify the physical location of these causes.

- **DYSWIS**: "Do You See What I See?" - A distributed network fault detection and diagnosis system.
  Designed DYSWIS (Do You See What I See), a distributed network fault diagnosis system for end users. Focused on designing crowdsourced rule system and distributed probing. Implemented in Java as a network diagnosis framework using OSGi Java-based dynamic module system and Kademlia DHT.

AWARD

- **Winner, 2011 Internet2 IDEA Award**
  One of the winners of 2011 Internet2 IDEA Award given to innovative advanced network applications that have the most positive impact and potential for adoption within the research and education community.

- **Winner, 2013 Juniper - Comcast SDN Software Workshop and Competition**
  One of the members of the winning team at the SDN software competition. Implemented an application-aware routing path algorithm and a visualization tool for SDN.

TEACHING ASSISTANT

- CSEE W4140 Networking Laboratory, Spring 2010
- COMS E6998 Cloud Computing: Concepts and Practice, Spring 2011

SKILLS

- Languages with expert-level knowledge: C, Java, JavaScript, PHP
- Other languages with working knowledge: Python, C++, Shell scripting
- Expert-level knowledge in networking protocols from top to bottom (e.g., SIP, DNS, TCP, OpenFlow)
- OS/Network/Cloud technologies: Amazon AWS, Linux containers (Docker), Cisco/Linux network administration
- Front-end technologies: JavaScript/AJAX/jQuery, HTML5, JavaFX
- Back-end technologies: PHP, Node.js, Socket.io, Hadoop, MySQL, MongoDB

INTERNSHIP

BELL LABS, ALCATEL-LUCENT, Murray Hill, New Jersey Jun 2012 - Aug 2012
Summer Intern, Enabling Computing Technologies Team
- Researched on ontology-based Internet of Things event management system.
- Wrote a pattern-aware event language for optimized detection of composite events.

IBM T.J. WATSON RESEARCH CENTER, Hawthorne, New York Jun 2011 - Aug 2011
Summer Intern, Cloud Application Management Team
- Researched on resource management and virtual machine placement on Cloud Computing.
- Wrote a paper, "VBoom: Creating a virtual machine real estate boom."

BELL LABS, ALCATEL-LUCENT, Holmdel, New Jersey Jun 2010 - Aug 2010
Summer Intern, Service Infrastructure Research Team
- Researched on traffic localization in DHT-based BitTorrent networks
- Wrote a Vuze plugin to measure peer-to-peer traffic localization

PROFESSIONAL EXPERIENCE

SAMSUNG ELECTRONICS Co., Ltd, Suwon, South Korea Feb 2007 – Jun 2007
Software Engineer, Mobile Communication Division
- User Interface development team for Samsung cellular phones

FUTURE VALLEY (Naver Corporation), Seoul, South Korea Sep 2003 – Feb 2005
Software Engineer, Mobile Platform Department
- Developed the peer-to-peer infrastructure for Naver Phone, an Internet Telephony (VoIP) application. Focused on scalability issues in order to handle several thousands of users concurrently.

TODAY & TOMORROW Co., Ltd, Seoul, South Korea Mar 2002 – Aug 2003
Software Engineer, Network Software Developing Team
- Developed an Internet multimedia messenger, personal file sharing software, web-based mail and intranet system.

PUBLICATIONS

- **Kyung-Hwa Kim**, Jae Woo Lee, Michael Ben-Ami, Etan Zapinsky, Alexander Merkulov, Jan Janak, Hyunwoo Nam, Jong Yul Kim, and Henning Schulzrinne, "Flexible Network Address Mapping for Container-based Clouds", in submission
- Hyunwoo Nam, **Kyung-Hwa Kim**, Jong Yul Kim, Henning Schulzrinne, "Towards QoE-aware Video Streaming using SDN", IEEE Globecom 2014, December 2014
- **Kyung-Hwa Kim**, Hyunwoo Nam, Vishal Singh, Daniel Song, and Henning Schulzrinne, "DYSWIS: Crowdsourcing a Home Network Diagnosis", IEEE ICCCN, August 2014
- **Kyung Hwa Kim**, Hyunwoo Nam, and Henning Schulzrinne, "WiSlow: A WiFi Network Performance Troubleshooting Tool for End Users", IEEE INFOCOM 2014, April 2014
- Hyunwoo Nam, **Kyung-Hwa Kim**, Bong Ho Kim, Doru Calin, and Henning Schulzrinne, "Towards A Dynamic QoS-aware Over-The-Top Video Streaming in LTE" (**Best Paper Award**), IEEE WoWMoM, June 2014
- Hyunwoo Nam, **Kyung-Hwa Kim**, Doru Calin, and Henning Schulzrinne, "Dynamic Network Condition-Aware Video Server Selection Algorithms over Wireless Networks", IEEE ISCC, June 2014
- **Kyung-Hwa Kim**, Hyunwoo Nam, Jin-Hyung Park, and Henning Schulzrinne, "MoT: A Collaborative Network Troubleshooting Platform for the Internet of Things", IEEE WCNC 2014, April 2014
- **Kyung-Hwa Kim**, Hai Huang, Salman Abdul Baset, and Chunqiang Tang, "VBoom: Creating A Virtual Machine Real Estate Boom", IC2E 2013, San Francisco, CA, USA, March 2013
- Alessandro Amirante, Simon Pietro Romano, **Kyung-Hwa Kim**, and Henning Schulzrinne, "Online Non-Intrusive Diagnosis of One-Way RTP Faults in VoIP Networks Using Cooperation", IPTComm, Chicago, USA, August 2011
- Hyunwoo Nam, **Kyung-Hwa Kim**, Doru Calin, Henning Schulzrinne, "YouSlow: A Performance Analysis Tool for Adaptive Bitrate Video Streaming", ACM SIGCOMM 2014 (Posters and Demo), August 2014
- **Kyung Hwa Kim**, Hyunwoo Nam, and Henning Schulzrinne, "A Performance Troubleshooting Tool for Wi-Fi Networks", USENIX NSDI 2013 (Poster and Demo), Lombard, IL, April 2013
- **Kyung-Hwa Kim**, Moritz Steiner, and Matteo Varvello, "BitTorrent Traffic Localization using a Multi-layered DHT", IEEE INFOCOM 2011(Demo), Shanghai, China, April 2011