Lei Kang

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Research Interests

Mobile Computing, Networking Systems and Operating Systems.

Education

Ph.D. Student, Department of Computer Sciences, University of Wisconsin-Madison. 2012-present. GPA: 3.8/4.0.

M.Phil., Department of Computer Science and Engineering, Hong Kong University of Science and Technology, 2008-2010. GPA:10/12.

B.E., School of Software Engineering, Xidian University, 2004-2008. Major GPA:86/100.

Working Experience

Microsoft Research Cambridge, UK
Research Intern *08/24/2015-01/08/2016*
Qualcomm Inc. San Diego, CA
Software Engineering Intern *06/24/2013-08/30/2013*

Publications

1. **Lei Kang**, Bozhao Qi and Suman Banerjee. "A Wireless-Base Approach for Transit Analytics". **ACM HotMobile 2016**.
2. Bozhao Qi, **Lei Kang** and Suman Banerjee. "Demo: A Wireless-Based Approach for Transit Analytics". ACM HotMobile 2016 Demo Session.
3. **Lei Kang**, Bozhao Qi, Dan Janecek and Suman Banerjee. "EcoDrive: A Mobile Sensing and Control System for Fuel Efficient Driving". **ACM Mobicom 2015**.
4. **Lei Kang**, Bozhao Qi and Suman Banerjee. "Poster: Sensing and Controlling Fuel Consumption in Automobile Systems". ACM HotMobile 2015 Poster Session. **Awarded Best Poster**.
5. Siyuan Liu, **Lei Kang**, Lei Chen and Lionel Ni. "How to Conduct Distributed Incomplete Pattern Matching". IEEE Transactions on Parallel and Distributed Systems (**TPDS 2013**).
6. **Lei Kang**, Jin Zhang, Kaishun Wu, Dian Zhang and Lionel Ni. "RCSMA: Receiver-based Carrier Sense Multiple Access in UHF RFID Systems". **IEEE TPDS 2012**.
7. **Lei Kang**, Kaishun Wu, Jin Zhang, Haoyu Tan and Lionel Ni. "DDC: A Novel Scheme to Decode the Collisions in UHF RFID Systems". **IEEE TPDS 2012**.
8. **Lei Kang**, Chen Qian and Lionel Ni. "RSAA: Reliable Splitting Aware ALOHA to Capture the Passing Tags". **IEEE MASS 2012**.
9. Siyuan Liu, **Lei Kang**, Lei Chen and Lionel M. Ni. "Efficient and Effective Incomplete-Pattern Matching in Mobile Phone Networks". **IEEE ICDCS 2012**.
10. **Lei Kang**, Kaishun Wu, Jin Zhang and Haoyu Tan. "Decoding the Collisions in RFID Systems". **IEEE INFOCOM 2011**, Mini-symposium.
11. **Lei Kang**. "Protecting Location Privacy in Large-Scale Wireless Sensor Networks". **IEEE ICC 2009**.

Reviewer

IEEE Transactions on Parallel and Distributed Systems; IEEE Transactions on Computers; IEEE Transactions on Wireless Communications; IEEE Transcations on Communications.

Selected Projects

EcoDrive: Sensing and Controlling Fuel Consumption in Automobile Systems. Leading a project that collect and analyze data by Android tablet through OBD port. Modelling fuel consumption on different vehicles under different road conditions based on 10,000+ miles data collected. Emulating gas pedal through Arduino board to control air/fuel injection rate and vehicular speed by using drive-by-wire technology.

DriveSense: Sensing and evaluting driving performance by using smartphones. Totally 5000+ miles collected from 12 different drivers.

Design and implementation of Log-structured block device driver for Shingled disk.

Implementing hash join in SQLite3 and various hash tables.

Wireless Networks Measurement Framework: Build infrastructures on Linux device and Android phones to measure the wireless network quality, e.g., RTT, TCP throughput, in wide areas.

Aggregating Multiple Imbalanced Networking Interfaces: Design and implement a mechanism to aggregate multiple interfaces and expose only one single virtual interface to the user by using Tun interface.

RFID Systems Protocol Research: Conduct RFID system research on GunRadio USRP/USRP2 platforms and simulators. Design and Implement new protocols and algorithms to enhance the throughput and reliability of RFID systems.

Networking Simulator Development. Conduct P2P simulations (Gnutella2 protocol) on Linux NS3 platform (socket programming), including file search (UDP protocol) and file download (TCP protocol).

Honors, Awards & Fellowships

Best Poster Award. ACM Hotmobile, 2015.

Fastest Malloc. UW-Madison CS537, 2014.

Qualstar Diamond Award. Qualcomm, 2013.

Second Prize in Facebook Wisconsin Hackathon 2012.

Postgraduate Studentship. HKUST, 2008-2010.

Undergraduate with Outstanding Ability on Science and Technology **(top 1%)**, 2008.

First-Class Scholarship and **Excellent Student (top 3%)**, Xidian University, 2006-2008.

Meritorious Winner (First Prize) in Interdisciplinary Contest in Modeling (ICM), 2007.

Technical Skills

Programming Languages: C++, C, Java, PHP, JavaScript, HTML, Bash, Python, Perl, Ziria.

Platforms and Tools: Ubuntu, Android, Apache Tomcat, Network Simulator 3, Minicom, DD-WRT.