# Zhen Wang

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## Work Experience

**Google**
Software Engineer — June 2014 - Present
Improve Chrome's performance and efficiency.

**Rice University**
Researcher — August 2009 - May 2014
Improve user experience of mobile web browsing and design efficient mobile system.

**Texas Instruments**
Software Engineering Intern — Summer 2012
Designed and implemented 2D hardware acceleration for mobile browser graphics.

**Google**
Software Engineering Intern — Spring 2012
Optimized the performance of mobile web browsing.

## Education

**Rice University**
Ph.D. candidate in Electrical and Computer Engineering — May 2014
M.S. in Electrical and Computer Engineering (GPA: 3.83/4.00) — May 2012
Visiting Student in Electrical and Computer Engineering (GPA: 3.88/4.00) — August 2007 - May 2008

**Hong Kong University of Science and Technology** (HKUST)
B.E. in Electronic Engineering - Honor Research option (First Class Honors; GPA 10.46/12.00) — May 2009

## Honors and Awards

- Best Paper Award in ASPLOS 2014
- Best System Session Talk in ACM S3 2011 (co-located with MobiCom)
- Mark Weiser Best Paper Award in IEEE PerCom 2009

## Skills

- C/C++, Python, Java, JavaScript, HTML5, and Bash scripts
- Web technologies and WebKit - Extensive hacking of Android stock browser and Chromium graphics
- Experienced in Android application development and Linux kernel hacking

## Selected Research Projects

**K2 OS:** an Operating System for energy-efficient mobile system-on-chip. 2012 - 2014

- Designed and implemented K2 OS, which presents a single system image over heterogeneous processing cores that are hosted in separate coherence domains on mobile system-on-chip.
- K2 OS improves energy efficiency for light OS workloads by 8x-10x, while incurring less than 6% performance overhead for a device driver shared between kernels and requiring low software development effort.

**Guadalupe:** a browser design for heterogeneous hardware. 2012 - 2013

- Designed and implemented Guadalupe browser to dynamically utilize a 2D blitter and a 3D GPU for browser rendering according to run-time web application state (based on Chrome for Android).
- Guadalupe browser increases the frame rate of the other Android 3D benchmark by up to 39%, 6 times more power efficient, while achieving the same performance with little overhead.

**Tempo:** mobile browsers' performance characterization and improvement. 2010 - 2012

- Characterized the performance of mobile web browsing through extensive code instrumentation, fine-grain measurement, and what-if analysis.
- Designed speculative loading, a client-only solution, to improve mobile browsers' performance.
- Implemented Tempo browser, which reduces the page load time by 1 second (~20%) on average (based on Android stock browser).

**uWave:** an accelerometer-based gesture recognizer, requiring only single training sample. 2008 - 2009

- Designed and implemented an accelerometer-based gesture recognizer by applying Dynamic Time Warping (DTW) algorithm and template adaptation on gesture recognition.
- The prototype achieves 98.6% accuracy and only requires single training sample. It also allows users to employ personalized gestures.

## Selected Publications

- Robert LiKamWa, Zhen Wang, Aaron Carroll, Xiaozhu Lin, and Lin Zhong, "Draining our Glass: an energy and heat characterization of Google Glass," in Proc. ACM SIGOPS Asia-Pacific Workshop on Systems (APSYS), June 2014.
- Xiaozhu Lin, Zhen Wang, and Lin Zhong, "K2: A mobile operating system for heterogeneous coherence domains," in Proc. ACM Int. Conf. Architectural Support for Programming Languages and Operating Systems (ASPLOS), March 2014. (**Best Paper Award**)
- Zhen Wang, Felix Xiaozhu Lin, Lin Zhong, and Mansoor Chishtie, "Guadalupe: a browser design for heterogeneous hardware," Technical Report 2012-12-19, Rice University, December 2012.
- Xiaozhu Lin, Zhen Wang, and Lin Zhong, "Supporting distributed execution of smartphone workloads on loosely coupled heterogeneous processors," in Proc. the 2012 Workshop on Power-Aware Computing and Systems (HotPower), October 2012
- Zhen Wang, Felix Xiaozhu Lin, Lin Zhong, Mansoor Chishtie, "How Far Can Client-Only Solutions Go for Mobile Browser Speed?", in Proc. the World Wide Web Conference (WWW), April 2012.
- Felix Xiaozhu Lin, Zhen Wang, Robert LiKamWa, and Lin Zhong, "Using low-power processors in smartphones without knowing them," in ACM Int. Conf. Architectural Support for Programming Languages and Operating Systems (ASPLOS), March 2012.
- Zhen Wang, Felix Xiaozhu Lin, Lin Zhong, Mansoor Chishtie, "How Effective is Mobile Browser Cache?", in Proc. ACM workshop on Wireless of the students, by the students, for the students (S3), September 2011. (**Best Systems Session Talk**)
- Ahmad Rahmati, Clayton Shepard, Chad Tossell, Mian Dong, Zhen Wang, Lin Zhong, and Philip Kortum, "Tales of 34 iPhone Users: How they change and why they are different," Technical Report TR-2011-0624, Rice University, June 2011.
- Zhen Wang, Felix Xiaozhu Lin, Lin Zhong, Mansoor Chishtie, "Why are Web Browsers Slow on Smartphones?" in Proc. ACM Int. Workshop on Mobile Computing Systems and Applications (HotMobile), March 2011.
- Jiayang Liu, Zhen Wang, Lin Zhong, Jehan Wickramasuriya, and Venu Vasudevan, "uWave: Accelerometer-based personalized gesture recognition and its applications," in Proc. IEEE Int. Conf. on Pervasive Computing and Communications (PerCom), March 2009. (**Best Paper Award**)