Yun Cheng

Contact Information

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Current Status

CTO of Air Scientific, Beijing, China
WWW: http://air-scientific.com
Developed from the PAM project

Graduate student for master degree
Computer Science and Technology
Harbin Institute of Technology

Research Interests

Wireless and Mobile Sensing Systems, Cyber-Physical Systems, Data Science, Big Data Analytics Platform

Education

Harbin Institute of Technology, Harbin, Heilongjiang China

Graduate student Computer Science and Technology — Sept. 2012 - Present

Harbin Institute of Technology, Harbin, Heilongjiang China

B.Eng. Computer Science and Technology — Sept. 2008 - Jul. 2012

- GPA 91.2/100, Ranked professional first
- Graduate from Honors School as the excellent graduate student

Honors and Awards

Excellent graduate students of Session 2008 — 2012
in top 5% among all the graduates of Session 2008

MS Young Fellowship Scholarship(Microsoft Research Asia) — 2011
one of 30 excellent students selected among top 10 schools of China

The National Encouragement Scholarship — 2011
in top 5% among all the students

Honorable Mention Prize in Mathematical Modeling Contest(MCM) — 2011
in top 20% among all the teams

First Prize in Northeast China Mathematical Modeling Contest — 2010
in top 15% among all the teams

National Scholarship — 2009
in top 1% among all the students

Publications & Patents

Yun Cheng, Xiucheng Li, Zhijun Li, Shouxu Jiang, Xiaofan Jiang, etc. "*AirCloud: A Cloud-based Air-Quality Monitoring System for Everyone* ". In **SenSys14**: The 12th ACM Conference on Embedded Networked Sensor Systems.

Yun Cheng, Xiucheng Li, Zhijun Li, Shouxu Jiang, Xiaofan Jiang. "*Fine-Grained Air Quality Monitoring Based on Gaussian Process Regression* ". In **ICONIP14**: The 21st International Conference on Neural Information Processing.

Yun Cheng, Xiucheng Li, Ji Jia, Xiaofan Jiang, etc. "*Demo Abstract: An Autonomous Aerial System for Air-Quality Surveillance and Alarm*". In **HotMobile14**: The 15th International Workshop on Mobile Computing Systems and Applications.

Yilong Li, **Yun Cheng**, Xiucheng Li, Xiaofan Jiang, etc. "*Demo Abstract: QiLoc: A Qi-Wireless Based Platform for Robust User-Initiated Indoor Location Services* ". In **BuildSys14**: The 1st ACM International Conference on Embedded Systems For Energy-Efficient Buildings.

Yun Cheng, Pan Hu, Guobin Shen and Xiaofan Jiang. "*Demo Abstract: ThirdEye : Your Guardian Against Myopia*". In **EWSN13**: The 10th European Conference on Wireless Sensor Networks , 2013. Ghent, Belgium.

Yun Cheng, Chieh-Jan Mike Liang, Xiaofan Jiang, and Feng Zhao. "*Accurate Real-Time Occupant Energy-Footprinting in Commercial Buildings*". In **BuildSys12**: Proceedings of The Forth ACM Workshop On Embedded Sensing Systems For Energy-Efficiency In Buildings, 2012. Toronto, Canada.

Ben Zhang, Kaifei Chen, **Yun Cheng**, Chieh-Jan Mike Liang, Xiaofan Jiang, and Feng Zhao. "*Location-log: Bringing Online Shopping Benefits to the Physical World with Magnetic-based Proximity Detection*". In Proceedings of the 2nd International Workshop on Mobile Sensing, Apr. 2012. Beijing, China.

Zhijun Li, Shouxu Jiang, **Yun Cheng**, and Nan Che. "*A method to Detecting the Traffic Congestion Based on the Sensing in Road Intersections*". In Journal of software, 2011.

Li Chen, Zhijun Li, Shouxu Jiang, and **Yun Cheng**. "*Joint Resource Allocation and Scheduling for Content Downloading in Drive-thru Networks*". In IEEE International Conference on communications, 2013.

Xiaofan Jiang, Chieh-Jan Mike Liang, **Yun Cheng**, and Feng Zhao. "*Accurate Real-Time Occupant Energy-Footprinting in Commercial Buildings*". U.S. patent.

Academic Experience

China Intel IoT Joint Labs, Beijing, China

Full-time Research Intern Jul. 2013 - May. 2014

Mentor: Dr. Fred Xiaofan Jiang

PAM: Pervasive Air-Quaity Monitoring

We approach the challenging problem of accurate and affordable PM2.5 monitoring from a novel cloud-based data analytics perspective. By carefully designing and building our own PM2.5 monitors, we are able to obtain reasonably accurate PM2.5 measurement in real-time and at low cost. And by aggregating their data, plus other types of data at the cloud, we are able to learn and create model for particulate matter, which in turn helps us calibrate sensors, and infer PM2.5 concentrations.

- Designed and implemented the PAM cloud.
- Designed and implemented the online calibration models, deployed PAM devices and did the evaluation experiment.
- Designed and implemented some APIs for 3rd party developers
- Wrote research paper and submitted to SenSys14

QiLoc: A Qi-Wireless Based Platform for Robust User-Initiated Indoor Location Services

QiLoc is a simple yet effective way to accurately locate and identify occupants inside buildings. By utilizing the Qi wireless charging protocol, a QiLoc-enabled desk is able to identify a mobile phone placed on it and therefore locate the user. The cloud-side QiLoc server maintains location information of occupants, and provides a set of APIs via standard web services, such as location, ad-hoc group membership, and authentication. We demonstrate a number of smart-building applications, such as an Android app to locate others in the same room, a Windows widget to popup notifications on colleagues entry/exit events, and a proof-of-concepts integrating precise and live location information with calendar, instant messaging, and email systems.

- Designed and implented the QiLoc server.

- Helped design some QiLoc usage scenario.
- Helped write a demo abstract and submit to BuildSys14

Microsoft Research Asia, Beijing, China

Full-time Research Intern in Mobile and Sensing Systems group Dec. 2011 - Jul. 2012
Mentor: Dr. Fred Xiaofan Jiang

LiveSynergy
LiveSynergy is a novel magnetic-based proximity sensing and human-environment interacting system. It consists of three parts: LivePulses (devices to give virtual zones using magnetic induction), LiveLinks (devices to discover and interact with LivePulses), interoperability platform (wireless links and IPv6-based interfaces that allow rich human-environment interactions).

- Developed and maintained a web service to deal with the low level hardware information and the trigger-like things with the help of tornado.
- Developed and maintained a web portal for users to easily control and monitor hardware, create triggers to link the virtual and physical world together.
- Maintained a windows phone portal for users to interact with the services of our platform.
- Presented several demos for LiveSynergy and did some experiment.

Accurate Real-Time Occupant Energy-Footprinting
we present a model that enables the appliances with delay characteristics to be accounted accurately in real-time. Building on top of this model, we build a complete system that attributes usages from shared resources fairly, and delivers per-person energy footprint information to occupants and building managers.

- Found the problem and given the way to solve it.
- Developed a complete system and did the experiment.
- Wrote the paper and submitted to BuildSys' 12.
- Helped mentor write the patent.

PhoneWeb
The PhoneWeb project seeks to enable handheld devices to continuously and accurately discover all the people around it and to create and maintain a local neighborhood map.

- Bluetooth low energy technology characteristic testing.
- Cell tower information characteristic testing.

Harbin Institute of Technology, Harbin, China

Undergraduate in Pervasive Computing Lab of HIT Sept. 2010 - Nov. 2011
Advisor: Prof. Shouxu Jiang and Zhijun Li

clouddroid
Clouddroid a project based on Android mobile platform, intended to combine Cloud Application with software developed with Android. Its easy to develop software with synchronism on the platform.

- The project is supported by National Innovative Experiment Program for Undergraduates.
- Designed and implemented a framework to combine Cloud Application with software developed with Android..
- Designed and developed a web service to interact with the Cloud Application on the phones.
- Developed sample applications for the platform and did an employment.

Intelligent Traffic Project
This is a project aimed at providing warning information to drivers in advance on traffic situations by collecting and analyzing from transmitters in traffic.

- Data Processing, algorithm implementing and testing.
- Did the investigation and the experiment.

Skills	Python, R, Matlab, Java, Ruby, SQL, PHP, HTML, Javascript, Linux, Latex, TinyOS Machine Learning, Statistics, Algorithm, Signal Processing, Distributed Systems
References	Available on request.