Jinghao Shi

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Education

2013.9–present **University at Buffalo**.
PhD student. Dept. of Computer Science & Engineering
Advisors: Dr. Geoffrey Challen, Prof. Chunming Qiao

2011.9–2013.8 **The University of Hong Kong**.
PhD program (dropout), Dept. of Computer Science
Advisor: Prof. Cho-Li Wang

2007.9–2011.6 **University of Science and Technology of China**.
B.S. School of Computer Science and Technology

Research Interests

- Wireless Networks
- Mobile Computing

Research Projects

Ongoing

2015.6–Present **Formal Verification of Wireless Protocol Implementation**.

Abstract In this project, we try to answer this question: how to verify that an implementation is compliant to the wireless protocol specification? We propose to perform formal verification on packet traces collected using sniffers. The main challenges are: 1) how to collect packet traces that covers different aspect of the protocol? and 2) how to cope with sniffer imperfection (e.g., miss packets)?

2013.8–Present **PocketSniffer: A Measurement Offloading Framework for WLAN Spectrum Allocation**, [3, 6].

Abstract Client-side measurements have been proved valuable for spectrum allocation, yet collecting them from active devices is disruptive. We propose a new framework to offload such measurements to colocated idle smartphones. We implement a prototype system on Nexus 5 smartphones and OpenWRT router.

2013.8–Present **PhoneLab: A Large Scale Smartphone Platform Testbed**.

Abstract PhoneLab has more than 200 participants that carry Nexus 5 smartphones as their primary device. We build the smartphone platform based on Android Open Source Project (AOSP), and introduce various instrumentation to Android framework and Linux Kernel to study how the phone works in the wild. The ability of OTA updates enables us to facilitate further experimental platform changes.

Previous

2015.1–2015.6 **WiseFi: Enabling Reciprocal Wifi Sharing**, [1].

Abstract Using PhoneLab Wifi dataset, we investigate the reciprocal Wifi sharing opportunities, where two users can improve their network performance by allowing each other to access their private Wifi networks. We design the WiseFi system to enable reciprocal Wifi sharing without exchange network credentials.

2011.8–2013.1 **Share Virtual Memory for Non-Coherent Manycore architecture**, [4].

Abstract Hardware cache coherence is getting more complex and expensive to implement as the core count per processor keeps increasing. We explore software enforced cache coherence in Intel Single-Chip-Cloud (SCC) manycore chip. We implement a prototype Share Virtual Memory (SVM) system for Barrelfish OS.

2010.10–2011.5 **SLIM: Cloud Backed Data Structures for Mobile Systems**, [5].

Abstract SLIM is a data structure library that provides familiar STL-like interfaces and abstractions while accommodates the storage hierarchy that transcends device/cloud boundary behind the scene.

Research Experience

2015.9–Present **Research Assistant**, *University at Buffalo*, Advisor: Geoffrey Challen.
Working on PhoneLab project.

2015.6–2015.8 **Intern**, *Microsoft Research Redmond*, Mentor: Ranveer Chandra.
Worked on wireless protocol verification for XBOX accessory network.

2010.10–2011.5 **Intern**, *Microsoft Research Asia*, Mentor: Lintao Zhang.
Worked on SLIM project [5].

Publications

Papers

[1] **Jinghao Shi**, Liwen Gui, Chunming Qiao, Dimitrios Koutsonikolas, and Geoffrey Challen. A Little Sharing Goes a Long Way: The Case for Reciprocal Wifi Sharing. To appear in the *2nd Workshop on Hot Topics in Wireless*, **HotWireless'15**. ACM, 2015.

[2] Geoffrey Challen, Jerry Antony Ajay, Nick DiRienzo, Oliver Kennedy, Anudipa Maiti, Anandatirtha Nandugudi, Guru Prasad, Sriram Shantharam, **Jinghao Shi**, and Lukasz Ziarek. maybe We Should Enable More Uncertain Mobile App Programming. In *Proceedings of the 16th Workshop on Mobile Computing Systems and Applications*, **HotMobile'15**. ACM, 2015.

[3] **Jinghao Shi**, Zhangyu Guan, Chunming Qiao, Tommaso Melodia, Dimitrios

Koutsonikolas, and Geoffrey Challen. Crowdsourcing Access Network Spectrum Allocation Using Smartphones. In *Proceedings of the 13th ACM Workshop on Hot Topics in Networks*, **HotNets'14**, page 17. ACM, 2014.

[4] King Tin Lam, **Jinghao Shi**, Dominic Hung, Cho-Li Wang, Zhiquan Lai, Wangbin Zhu, and Youliang Yan. Rhymes: A Shared Virtual Memory System for Non-Coherent Tiled Many-Core Architectures. In *The 20th IEEE International Conference on Parallel and Distributed Systems*, **ICPADS'14**. IEEE., 2014.

[5] **Jinghao Shi**, Mingyuan Xia, Ming Wu, Lintao Zhang, and Zheng Zhang. SLIM: Mmap from the Cloud to Device, and Back. In *Proceedings of the Second Asia-Pacific Workshop on Systems*, **APSys'11**, pages 16:1–16:5, New York, NY, USA, 2011. ACM.

Posters & Demos

[6] **Jinghao Shi**, Zhangyu Guan, Chunming Qiao, Tommaso Melodia, Dimitrios Koutsonikolas, and Geoffrey Challen. Crowdsourcing Access Network Spectrum Allocation Using Smartphones. Poster presented in *16th Workshop on Mobile Computing Systems and Applications*, **HotMobile'15**. ACM, 2015.

Teaching Experience

Spring 2015 **Teaching Assistant**, *CSE421/521: Introduction to Operating Systems.*
Instructor: Dr. Geoffrey Challen

Spring 2014 **Teaching Assistant**, *CSE421/521: Introduction to Operating Systems.*
Instructor: Dr. Geoffrey Challen

Fall 2013 **Teaching Assistant**, *CSE241: Digital Systems.*
Instructor: Dr. Bina Ramamurthy

Technical Skills

Languages Python, Java, C.

Platforms Android Open Source Project (AOSP), OpenWRT, Linux.

Frameworks Django.

Tools Vim, Git, LaTeX.

References

- Dr. Geoffrey Challen (advisor)
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  Assistant Professor
  Dept. of Computer Science & Engineering
  University at Buffalo

- Ranveer Chandra (mentor)
  ranveer@microsoft.com
  Principal Researcher
  Microsoft Research Redmond

- Shuvendu Lahiri (collaborator)
  shuvendu@microsoft.com
  Senior Researcher
  Microsoft Research Redmond