Jinghao Shi

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Jinghao Shi
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Education

2013.9–2017.9 (Expected) **University at Buffalo**
PhD Candidate.
Advisors: Dr. Geoffrey Challen, Prof. Chunming Qiao

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

Research Interests

- Wireless Networks
- Mobile Systems

Research Projects

Ongoing

2015.6–Present **Wireless Protocol Verification**, [1]
- **Problem** Verify if the wireless protocol *implementation* meets its *specification*
- **Method**
  - Test case generation via model checking
  - Reactive real-time wireless packet jammer
  - Verify sniffer trace under uncertainty

2013.8–Present **PhoneLab: A Large Scale Smartphone Platform Testbed**, [3]
- Customized Android platform based on AOSP and Cyanogenmod
- 100+ Nexus 6 devices carried by real participants
- Continuous integration and experiment roll out

Previous

2013.8–2015.5 **PocketSniffer: Crowdsourcing Spectrum Allocation**, [7, 9]
- Utilize client-side channel measurement feedback for channel adaptation
- Prototype implementation on Nexus 5/OpenWRT platform
- Large scale evaluation on PhoneLab.

2015.1–2015.6 **WiseFi: Enabling Reciprocal Wifi Sharing**, [5]
- Investigate reciprocal Wifi sharing opportunities using PhoneLab dataset
- Prototype WiseFi system on Nexus 5/OpenWRT platform

2011.8–2013.1 **Rhymes: Share Virtual Memory for Non-Cache-Coherent Manycore Architecture**, [4]

- Software defined shared virtual memory without hardware cache coherence
- Provide release consistency model
- Prototype implementation on Barrelfish OS/Intel SCC chip

2010.10–2011.5 **SLIM: Cloud Backed Data Structures for Mobile Systems**, [8]

- STL-like data structure library
- Transparently transcends storage hierarchy and device/cloud boundary

Research Experience

Summer 2016 **Intern**, *Microsoft Research*, Redmond, Mentor: Ranveer Chandra
Continued working on Xbox wireless protocol verification.

Summer 2015 **Intern**, *Microsoft Research*, Redmond, Mentor: Ranveer Chandra
Worked on Xbox wireless protocol verification.

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

2010.10–2011.5 **Intern**, *Microsoft Research Asia*, Beijing, Mentor: Lintao Zhang
Worked on SLIM project [8].

Publications

Conference Papers

[1] **Jinghao Shi**, Shuvendu K Lahiri, Ranveer Chandra, and Geoffrey Challen. Wireless protocol validation under uncertainty. In *16th International Conference on Runtime Verification (**RV'16**)*. **Best Paper Award**.

[2] **Jinghao Shi**, Lei Meng, Aaron Striegel, Chunming Qiao, Dimitrios Koutsonikolas, and Geoffrey Challen. A Walk on the Client Side: Monitoring Enterprise Wifi Networks Using Smartphone Channel Scans. In *Proceedings of the 35th IEEE Conference on Computer Communications (**INFOCOM'16**)*. **Best-in-Session Presentation Award**.

[3] **Jinghao Shi**, Edwin Santos, and Geoffrey Challen. Why and how to use phonelab. *GetMobile: Mobile Comp. and Comm.*, 19(4):32–38, March 2016.

[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**)*.

Workshop Papers

[5] **Jinghao Shi**, Liwen Gui, Dimitrios Koutsonikolas, Chunming Qiao, and Geoffrey Challen. A little sharing goes a long way: The case for reciprocal wifi sharing. In *Proceedings of the 2nd International Workshop on Hot Topics in Wireless (**HotWireless'15**)*.

[6] 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**)*.

[7] **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**)*.

[8] **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**)*.

Posters & Demos

[9] **Jinghao Shi**, Zhangyu Guan, Chunming Qiao, Tommaso Melodia, Dimitrios Koutsonikolas, and Geoffrey Challen. Crowdsourcing Access Network Spectrum Allocation Using Smartphones. In *16th Workshop on Mobile Computing Systems and Applications (**HotMobile'15**)*.

Teaching Experience

Spring 2015/2014 **Teaching Assistant**, *CSE421/521: Introduction to Operating Systems*
Instructor: Dr. Geoffrey Challen

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

Online Footprints

Open Source Projects
- WlTrace: Pcap (w/ Radiotap) 802.11 packet trace parser
- Various Pelican and Octopress plugins

Blog
- Pearls in Life: various thoughts and technical notes
- Over 150K page views since 2011

Technical Skills

Languages Python, C, Java, Verilog
Platforms Android Open Source Project (AOSP), OpenWRT, Linux
Tools Vim, Git, LaTeX

References

Co-advisor **Dr. Geoffrey Challen**, *challen@buffalo.edu*
Assistant Professor
Dept. of Computer Science & Engineering, University at Buffalo

Co-Advisor **Prof. Chunming Qiao**, *qiao@buffalo.edu*
Professor
Dept. of Computer Science & Engineering, University at Buffalo

Dissertation Committee **Dr. Dimitrios Koutsonikolas**, *dimitrio@buffalo.edu*
Assistant Professor
Dept. of Computer Science & Engineering, University at Buffalo

Collaborator **Ranveer Chandra**, *ranveer@microsoft.com*
Principal Researcher
Microsoft Research Redmond

Collaborator **Shuvendu Lahiri**, *shuvendu@microsoft.com*
Senior Researcher
Microsoft Research Redmond