

Chunyi Peng

Associate Professor

Computer Science, Purdue University

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Research Interests

My current research interests are in the broad areas of mobile networking, system and security, with a recent focus on renovating 5G/6G mobile network architecture/protocols/technologies, mobile network intelligence, 5G/IoT security, edge computing for drones and robots.

Education

University of California, Los Angeles

Ph.D, Computer Science

Dissertation: Cellular Network for Mobile Devices and Applications: Infrastructure Limitations and Solutions

Los Angeles, USA

Sep. 2009 – June 2013

Tsinghua University

M.Eng, Automation

Graduated with highest honors at Tsinghua university, Best Thesis Paper Award

Beijing, China

Sep. 2002 – Jan. 2005

Tsinghua University

B.Eng, Automation

Graduated with highest honors at Tsinghua university and in Beijing

Beijing, China

Sep. 1998 – July 2002

Appointments

Computer Science, Purdue University

Associate Professor

Assistant Professor

West Lafayette, USA

Aug. 2020 – now

Aug. 2017 – Aug.2020

Computer Science Engineering, Ohio State University

Assistant Professor

Columbus, USA

Aug. 2013 – Aug. 2017

Microsoft Research Asia

Associate/Assistant Researcher on Wireless Networking Group

Beijing, China

Dec. 2005 – Sep. 2009

T3G Ltd.,

Engineer on 3G TD-SCDMA chipset development

Beijing, China

Jan. 2005 – Dec. 2005

Short-Term Appointments

Microsoft Research

Research Intern on Mobility & Networking Group

Redmond, USA

Nov. 2012 - Feb. 2013

IBM TJ Watson Research Center

Research Intern on Cloud Computing Group

Yorktown Heights, USA

June – Sep. 2011

Research Intern on Wireless Networking Group

June – Sep. 2012

Selected Honors and Awards

- 2022 Seed for Success Acorn Award, Purdue University
- 2022 Distinguished Alumni, CS@UCLA
- 2022 ACM MobiCom Best Community Paper Award Runner-up
- 2022 ACM MobiCom Outstanding PC Member Award
- 2021 IEEE INFOCOM distinguished TPC Member

- 2019 Award from Google Android Security on reporting WiFi calling's vulnerability
- 2018 NSF CAREER Award
- 2018 ACM MobiCom Best Demo Award
- 2018 IEEE CNS Best Paper Award
- 2017 ACM MobiCom Best Community Paper Award
- 2017 Facebook's Bounty on reporting a vulnerability on SMS for Facebook
- 2016 ACM MobiCom Best Community Paper Award
- 2016 IEEE INFOCOM distinguished TPC Member
- 2015 Finalist for Qualcomm Innovation Fellowship (Co-mentor)
- 2013 Northrup-Grumman Outstanding Graduate Student Award, UCLA
- 2011 IBM Ph.D. Fellowship Award
- 2009 UCLA Chancellor's Prize with Graduate Fellowship (2009-2011)
- 2008 ACM MobiSys Best Demo Award
- 2007 ACM SenSys Best Demo Award
- 2007 ACM MobiSys Best Demo Award

Selected Publications (2020 – Now) (Citations: 6,454, H-index: 35, i10-index: 69)

All the publications at Google Scholar, <http://scholar.google.com/citations?user=7QF1eF4AAAAJ>

- [1] Yanbing Liu, Junpeng Guo, Chunyi Peng. Demystifying Secondary Radio Access Failures in 5G. *HotMobile'24*.
- [2] Shengqing Xia, Junpeng Guo, Chunyi Peng. SSS: Towards Autonomous Drone Delivery to Your Door Over House-Aware Semantics. *HotMobile'24*.
- [3] Jingwen Shi, Sihan Wang, Min-Yue Chen, Guan-Hua Tu, Tian Xie, Man-Hsin Chen, Yiwen Hu, Chi-Yu Li, Chunyi Peng. IMS is Not That Secure on Your 5G/4G Phones. *Conditionally accepted by MobiCom'24*.
- [4] Zhehui Zhang*, Yanbing Liu*, Qianru Li, Zizheng Liu, Chunyi Peng, and Songwu Lu. Dependent Misconfigurations in 5G/4.5G Radio Resource Control. *CoNext'23*. (*: co-primary authors).
- [5] Qianru Li, Zhehui Liu, Yanbing Liu, Zhaowei Tan, Chunyi Peng and Songwu Lu. CA++: Enhancing Carrier Aggregation Beyond 5G. *MobiCom'23*.
- [6] Zizheng Liu, Shaan Shekhar, and Chunyi Peng Breaking Geographic Routing Among Connected Vehicles *IEEE/IFIP DSN'23*.
- [7] Junpeng Guo*, Shengqing Xia* and Chunyi Peng OPA: One-Predict-All For Efficient Deployment. *INFOCOM'23*. (*: co-primary authors).
- [8] Yanbing Liu and Chunyi Peng A Close Look at 5G in the Wild: Unrealized Potentials and Implications. *INFOCOM'23*.
- [9] Yiwen Hu, Min-Yue Chen, Guan-Hua Tu, Chi-Yu Li, Sihan Wang, Jingwen Shi, Tian Xie, Li Xiao, Chunyi Peng, Zhaowei Tan, Songwu Lu. Uncovering Insecure Designs of Cellular Emergency Services (911). In *ACM International Conference on Mobile Computing and Networking (MobiCom)*, 2022.
- [10] Junpeng, Shengqing Xia, Chunyi Peng. VPPlus: Exploring the Potentials of Video Processing for Live Video Analytics at the Edge. In *IEEE/ACM International Symposium on Quality of Service (IWQoS)*, June 2022.
- [11] Sihan Wang, Guan-Hua Tu, Xinyu Lei, Tian Xie, Chi-Yu Li, Po-Yi Chou, Fucheng Hsieh, Yiwen Hu, Li Xiao, and Chunyi Peng. Insecurity of Operational Cellular IoT Service: New Vulnerabilities, Attacks, and Countermeasures. In *ACM International Conference on Mobile Computing and Networking (MobiCom)*, 2021.
- [12] Yuanjie Li, Chunyi Peng, Zhehui Zhang, Zhaowei Tan, Haotian Deng, Jinghao Zhao, Qianru Li, Yunqi Guo, Kai Ling, Boyan Ding, Hewu Li, and Songwu Lu. Experience: A Five-Year Retrospective of MobileInsight. In *ACM International Conference on Mobile Computing and Networking (MobiCom)*, 2021.
- [13] Qianru Li, and Chunyi Peng. Reconfiguring Cell Selection in 4G/5G Networks In *IEEE International Conference on Network Protocols (ICNP)*, Nov. 2021.
- [14] Amit Sheoran, Sonia Fahmy, Matthew Osinski, Chunyi Peng, Bruno Ribeiro and Jia Wang. Experience: Towards Automated Customer Issue Resolution in Cellular Networks. In *ACM International Conference on Mobile Computing and Networking (MobiCom)*, Sep. 2020.

- [15] Haotian Deng, Qianru Li, Jingqi Huang and Chunyi Peng. iCellSpeed: Increasing Cellular Data Speed with Device-Assisted Cell Selection. In *ACM International Conference on Mobile Computing and Networking (MobiCom)*, Sep. 2020.
- [16] Haotian Deng, Kai Ling, Junpeng Guo and Chunyi Peng. Unveiling the Missed 4.5G Performance In the Wild. In *ACM International Workshop on Mobile Computing Systems and Applications (HotMobile)*, 2020.

Selected Talks

- o *Bridge the Gaps between nextG Security and Wireless Spectrum: A Reflection from 5G Insecurity*, NSF Workshop on Security of FutureG and Spectrum Sharing , Oct 2023
- o *From 1 to N: An Untold Story Behind 5G Radio Resource Control*, Talk at AT&T Research Lab, UC Riverside, May/June 2023
- o *Revisit Mobility in the 5G Era: New and Old Challenges*, Keynote at ACM MobiArch 2021, April 2022
- o *Securing Trillions of Cellular Internet of Things (C-IoTs) with δ -analysis*, MIT IoT Seminar, May 2021
- o *Quality Measurement over Quality Data Reuse in Cellular Networks*, Framing talk at the 2nd NSF Workshop on Overcoming Measurement Barriers to Internet Research (WOMBIR-2), April 2021
- o *Reflections of My Career Path: the Good, the Bad, the Ugly*, Keynote at NeTS Early Career Workshop 2019, Alexandria, VA, Aug. 2019
- o *AIM: Amplifying Intelligence in Mobile Networks*, MIT, UIUC, UT Austin, Chicago, USC, Notre Dame, Rice, MSU, Indiana, Qualcomm, NEC, AT&T, May. 2018 - Mar. 2019
A public version is available at <https://www.cs.purdue.edu/homes/chunyi/talks/AIM-summary-public.pdf>, 2019
- o *Verifying Cellular Network Operations On Your Phones From Simulation to Practice*, IEEE Globecom'17 Tutorial, Singapore, Dec. 2017
- o *A Security Perspective on VoLTE Our Untold Research Story and Lessons*, Invited by GSMA (GSM Association), Toronto, Canada, Sep. 2016 (Audience: 100+ global operators and vendors at GSMA)

Selected Professional Service

- o **TPC co-chair** for
 - IEEE/IFIP Wireless On-demand Network systems and Services Conference (WONS) · 2022
 - ACM International Conference on Mobile Computing and Networking (MobiCom) · 2021
 - ACM International Workshop on Wireless Network Testbeds, Experimental evaluation & Characterization (WiNTech, co-located with MobiCom) · 2017
 - ACM Workshop on Visible Light Communication Systems (VLCS, co-located with MobiCom) · 2015
- o **General co-chair** for IEEE Conference on Communications and Network Security (CNS), 2023
- o **Steer Committee Member** for ACM International Workshop on Wireless Network Testbeds, Experimental evaluation & Characterization (WiNTech), 2018 – now
- o **TPC Member** for MobiCom (2014 - 2024), SIGCOMM (2024), MobiSys (2014, 2015, 2017, 2020, 2024), INFOCOM (2016, 2017, 2021, 2024), CoNext (2023 - 2024), APNet (2023), NSDI (2022), CCS (2022), ICNP (2015, 2016), WWW (2017, 2018), SECON (2015, 2017, 2018), HotMobile (2016, 2017, 2022), NDSS (2016, 2017), CNS (2016 - 2020), AsiaCCS (2018-2019), etc.
- o **Associate Editor** of IEEE Transactions on Networking (ToN), IEEE Transactions on Mobile Computing (TMC), IEEE Transactions on Information Forensics and Security (TIFS) and Computer Networks.
- o **Mentor** of Horizon Program (for first-generation college students at Purdue) · 2019 – now

Current Students

- o Ph.D. students (6): Junpeng Guo, Yanbing Liu, Jingqi Huang, Shengqing Xia, Chen Peng, Shilong Lei
- o MS students (1): Shaan Shekhar
- o Undergrad students (2): Enze Wang, Ziyang Fang