Yanbing Liu

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Research Interest

My current research interests are in the area of mobile networking, with a focus on 5G/6G networks measurement and design.

Education

Purdue University, West Lafayette, USA *Aug. 2020 - Present*
Ph.D in Department of Computer Science
Advisor: *Prof. Chunyi Peng*

University of Science and Technology of China (USTC), Hefei, P.R.China *Sep. 2017 - Jun. 2020*
M.E. in Department of Electronic Engineering and Information Science
Advisor: *Prof. Guo Wei*
***National Scholarship* (*Top 1%*)**, 2018

University of Science and Technology of China (USTC), Hefei, P.R.China *Sep. 2013 - Jun. 2017*
B.E. in Department of Electronic Engineering and Information Science

Professional Experience

Purdue University, West Lafayette, USA *Aug. 2021 - Present*
Research Assistant

AT&T Labs, Bedminster, USA *May. 2023 - Jul. 2023*
Research Intern

Research Experience

5G in the Sky *Dec. 2023 - Feb. 2024*
- Perform a drone-based case study to demonstrate the both high potential and high risk of 5G performance in the sky.
- Confirm the root causes of under-utilized 5G resources in the sky.

Failure Handling in 5G RAN *Mar. 2023 - Oct. 2023*
- Reveal three types of problematic failure handling on secondary radio access with measurement study in 5G networks.
- Pinpoint the root causes of problematic failure handling and quantify the impact on user performance.

Inferring Impacted Users in Outages *May. 2023 - Dec. 2023*
- Propose a preliminary solution to infer impacted users in outages, and evaluate its effectiveness.
- Conduct in-depth case study to analyze the challenges and discuss design insights in this task.

Dependent Misconfigurations in 5G/4.5G *Oct. 2022 - May. 2023*
- Implement delta state machine (DSM), a new model to examine problematic dependencies among varying configurations.
- Utilize DSM to automatically detect misconfiguration instances in real-world datasets.

5G Experience Measurement *Apr. 2021 - Jul. 2022*
- Measure and characterize 5G experience on coverage, availability and performance with three main US operators.
- Identify performance issues leading to unsatisfactory 5G experience and analyze the root causes.
- Design a patch solution *5GBoost*, and validate its effectiveness to realize more 5G potentials.

Enhancing Carrier Aggregation Beyond 5G *Jan. 2022 - Jul. 2022*
- Prepare motivating examples from real-world 5G datasets to illustrate the sluggish Carrier Aggregation (CA) procedure.
- Perform trace-driven evaluation to show the benefit of our proposed new design CA++.

Selected Publications

- **Yanbing Liu**, Jingqi Huang and Chunyi Peng, "The Sky is Not the Limit: Unveiling Operational 5G Potentials in the Sky," *IEEE/ACM International Symposium on Quality of Service* (*IWQoS '24*), Jun 2024.
- **Yanbing Liu**, Junpeng Guo and Chunyi Peng, "Demystifying Secondary Radio Access Failures in 5G," *The 25th International Workshop on Mobile Computing Systems and Applications* (*HotMobile '24*), Feb 2024.
- *Zhehui Zhang, ***Yanbing Liu**, Qianru Li, Zizheng Liu, Chunyi Peng, and Songwu Lu, "Dependent Misconfigurations in 5G/4.5G Radio Resource Control," *ACM International Conference on emerging Networking EXperiments and Technologies* (*CoNEXT '23*), Dec 2023.
- *Qianru Li, *Zhehui Zhang, **Yanbing Liu**, Zhaowei Tan, Chunyi Peng and Songwu Lu, "CA++: Enhancing Carrier Aggregation Beyond 5G," *The 29th International Conference on Mobile Computing and Networking* (*MobiCom '23*), Oct 2023.
- **Yanbing Liu** and Chunyi Peng, "A Close Look at 5G in the Wild: Unrealized Potentials and Implications," *IEEE International Conference on Computer Communications* (*INFOCOM '23*), May 2023.