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 - Present*
Research Intern

Research Experience

5G in the Sky *Oct. 2022 - present*
- 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.

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++.

LTE Extreme Mobility Management Optimization *Jul. 2020 - Jan. 2021*
- Find frequent radio link failures of LTE cells under extreme mobility (>300km/h).
- Propose a device-side solution to forecast link failure and perform pre-emptive cell switch actions to reduce suspension.

Publications

- *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.
- **Yanbing Liu**, Xiaowei Qin, Ting Zhu, Xiaohui Chen and Guo Wei, "Improve MPTCP with SDN: From the perspective of resource pooling," *Journal of Network and Computer Applications*, vol. 141, pp. 73-85, Sep 2019.
- **Yanbing Liu**, Xiaowei Qin, Tianyi Zhang, Ting Zhu, Xiaohui Chen and Guo Wei, "Decoupled TCP Extension for VLC Hybrid Network," *IEEE/OSA Journal of Optical Communications and Networking*, vol. 10, no. 5, pp. 563-572, May 2018.
- **Yanbing Liu**, Xiaowei Qin, Ting Zhu, Xiaohui Chen and Guo Wei, "BESS: BDP Estimation Based Slow Start Algorithm for MPTCP in mmWave-LTE Networks," *2018 IEEE 88th Vehicular Technology Conference* (*VTC Fall*), 2018.