Yanbing Liu

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Research Interest: Measurement & Design of Mobile Networking (4G/5G/6G)

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

Publications

- 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 (conditionally accepted).
- **Yanbing Liu** and Chunyi Peng, "A Close Look at 5G in the Wild: Unrealized Potentials and Implications," submitted to *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.

Research Experience

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 called *5GBoost*, and validate its effectiveness to realize more 5G potentials.

Enhancing Carrier Aggregation Beyond 5G — *Jan. 2021 - Jul. 2022*
- Perform trace-driven evaluation with real-world collected 5G datasets to illustrate the benefit of CA++.

LTE Extreme Mobility Management Optimization — *Jul. 2020 - Jan. 2021*
- Find that current mobility support of LTE networks will cause frequent radio link failures and consequent data suspension under extreme mobility (>300km/h), through a study over real-world collected datasets.
- Propose a device-side solution to forecast link failure and perform pre-emptive cell switch actions to reduce suspension.

Improve MPTCP with Software Defined Network (SDN) — *May 2018 - Jul. 2018*
- Design novel routing and congestion control schemes for MPTCP leveraging global information collected by SDN to achieve efficient and fair bandwidth allocation.
- Implement extended MPTCP in Linux kernel and evaluat the performance with Mininet and Floodlight controller.

Decoupled TCP for Visible Light Communication (VLC) networks *Jul. 2017 - Dec. 2017*

- Decouple the uplink and downlink of bi-directional transmission of TCP and MPTCP to support uni-directional reliable transmission over VLC networks.
- Implement decoupled TCP and MPTCP in Linux kernel, and perform evaluation in a real VLC network.

Skills

Programming: Python, C, C++, Java
Software: NS-3, Mininet, Floodlight, MobileInsight