Lingzhi Zhao

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Research Interests

Multimedia Communication, Convex and Nonconvex Optimization, Wireless Communication

Education

Shanghai Jiao Tong University **Sep. 2019 – Mar. 2022 (expected)**
M.S. in Information and Communication Engineering *Advisor: Prof. Ying Cui*

Shanghai University **Sep. 2015 – July. 2019**
B.S. in Communication Engineering

Publications

- [**TIP'21**] **Lingzhi Zhao**, Ying Cui, Zhi Liu, Yunfei Zhang, and Sheng Yang, "Adaptive Streaming of 360 Videos with Perfect, Imperfect, and Unknown FoV Viewing Probabilities in Wireless Networks," *IEEE Trans. Image Process.*, 2021.[pdf]
- [**ComEX'21**] Wuyang Jiang, Chencheng Ye, **Lingzhi Zhao**, Ying Cui, and Zhi Liu, "Optimal Adaptive Streaming of A Scalable Multi-view Video via Rate Splitting and SIC," *IEICE Commun. Express*, 2021.[pdf]
- [**TWC'21**] Chengjun Guo, **Lingzhi Zhao**, Ying Cui, Zhi Liu and Derrick Wing Kwan, "Power-Efficient Wireless Streaming of Multi-Quality Tiled 360 VR Video in MIMO-OFDMA Systems," *IEEE Trans. Wireless Commun.*, 2021.[pdf]
- [**GlobeCom'20**] **Lingzhi Zhao**, Ying Cui, Chengjun Guo, and Zhi Liu, "Optimal Streaming of 360 VR Videos with Perfect, Imperfect and Unknown FoV Viewing Probabilities," *IEEE Global Communications Conference*, 2020.[pdf]

Research Experiences

Rate Splitting for General Multicast **Sep. 2020 – present**

- Proposed a rate splitting scheme with joint decoding for general multicast in multi-carrier wireless systems
- Formulated rate maximization problems and proposed CCCP and SSCA methods to solve the problems in slow fading and fast fading scenarios, respectively
- To be submitted to IEEE Trans. Wireless Commun.

Network Information Exposure for Live Streaming in Vehicle Networks **Sep. 2020 – present**

- Proposed a live video streaming model in vehicular networks; proposed dynamic programming and reinforcement learning methods and achieved 62% and 90% gains on QoE against existing works, respectively
- Proposed a network information exposure method and further achieved at almost 43% gains on QoE

Adaptive 360 Video Streaming **Jul. 2019 – Aug. 2020**

- Proposed a two time-scale system to maximize the video perceptual quality while keeping rebuffering time small via encoding rate adaptation at each GOP and transmission adaptation at each transmission slot
- Considered FoV prediction error and revealed its impact on the performance of adaptive 360 video streaming
- Formulated utility maximization problems and proposed convex optimization and CCCP methods to solve the problems in the single-user and multi-user scenarios, respectively
- Published in IEEE Trans. Image Process.

Industrial Experience

DPVR Co., Ltd **Apr. 2018 – May 2019**

Software Engineer Intern @ Graphic Team *Shanghai, China*

- Proposed and implemented a deep learning-based method to predict users' calorie consumption by the traces of the headsets and controllers when they are playing VR applications
- Developed an interactive application using C++ to display the real-time and history calorie consumption for VR users
- Fixed hundreds of bugs and finished tens of requirements to facilitate the development of the software

Teaching & Activities

TA, ICE7301H, ICE7302H : **Convex Optimization** **Sep. 2020 – Jun. 2021**

Reviewer for IEEE Trans. Wireless Commun. **2021**

Reviewer for ACM MobiHoc **2021**

Reviewer for IEEE PIMRC **2021**

Awards

SJTU Outstanding Scholarship **2020**

SHU Outstanding Scholarship **2016,2017,2018**

Technical Skills

Languages: Python, Matlab, C/C++, HTML/XML (ranked by proficiency)
Tools: LaTeX, VS Code, Git