

LINGZHI ZHAO

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Research Interests

360 Video Streaming, Multimedia Communication, Convex and Nonconvex Optimization

Education

Shanghai Jiao Tong University

M.S. in Information and Communication Engineering

Sep. 2019 – Mar. 2022 (expected)

Advisor: Prof. Ying Cui; GPA: 3.84/4.00

Shanghai University

B.S. in Communication Engineering

Sep. 2015 – July. 2019

GPA: 3.66/4.00

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.*, major revision.
- [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.
- [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.
- [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.

Research Experiences

Rate Splitting for General Cast with Applications in 360 Video Streaming

Sep. 2020 – present

- Proposed a rate splitting scheme with joint decoding for general cast in multi-carrier wireless systems
- Applied the proposed design to wireless streaming of a tiled 360 video to further improve its performance

Network Information Exposure for Live Streaming in Vehicle Networks

Sep. 2020 – present

- Studied the existing works of adaptive live video streaming in vehicular networks
- Proposed a live video streaming system model, which incorporates the mobility of the vehicles
- Explore optimization-based and learning-based adaptive live streaming algorithms which take full use of the information from both network layer and application layer to maintain good 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; applied advanced optimization methods to solve the problems; obtained globally optimal solutions in the single-user scenario and KKT points in the multi-user scenarios
- Published in GlobeCom 2020 and the journal version was submitted to 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 production

Teaching & Activities

TA, ICE7301H, ICE7302H : **Convex Optimization**

Sep. 2020 – Jun. 2021

Reviewer for IEEE Trans. Wireless Commun.

2021

Reviewer for ACM MobiHoc.

2021

Technical Skills

Languages: Python, Matlab, C/C++, HTML/XML (ranked by proficiency)

Tools: \LaTeX , VS Code, Git