

RESEARCH INTERESTS	I am interested in designing and building performant multimedia and mobile systems by leveraging machine learning and advanced AI techniques (e.g., generative and vision language models). Some applications are (360) video streaming, cloud VR gaming, and underwater communication.	
EDUCATION	University of Illinois Urbana-Champaign	
	<i>Ph.D. in Computer Science</i>	2022 - 2026 (<i>expected</i>)
	• Advisor: Prof. Klara Nahrstedt	
	Shanghai Jiao Tong University	
	<i>M.S. in Electrical and Computer Engineering</i>	2019 - 2022
	• Advisor: Prof. Ying Cui	
	Shanghai University	
	<i>B.S. in Electrical and Computer Engineering</i>	2015 - 2019
SELECTED PROJECTS	Underwater Image Transmission between Mobile Devices	2023.08 - 2024.09
	<ul style="list-style-type: none"> Designed and implemented the first underwater acoustic system that enables reliable image transmission between mobile devices. Employed generative image compression and enhanced its bandwidth efficiency and error resilience for underwater communication. Implemented reliability-enhancing techniques at the PHY layer to mitigate the impact of underwater transmission errors. Implemented a prototype on Android devices and reliably delivered the image under 9 seconds at distances of up to 20 meters. Paper submitted to ACM SIGCOMM 2025. 	
	Neural Adaptive Wireless Video Streaming	2022.08 - 2023.08
	<ul style="list-style-type: none"> Optimized the traditional reinforcement learning algorithm for video streaming and improved convergence speed and performance (by 14.4%). Modeled the impacts of lower-layer information in adaptive video streaming, allowing a flexible tradeoff among QoE, training, and inference costs. Leveraged continual learning-based online tuning methods that solve the model mismatch issue for various network environments. Algorithm deployed to Tencent Cloud platform for commercial purposes. 	
	Adaptive Wireless 360 Video Streaming	2019.07 - 2020.08
	<ul style="list-style-type: none"> Proposed a cross-layer design for 360 video streaming that improved QoE via bitrate adaptation at each GOP and transmission adaptation at each PHY slot. Designed a robust ABR algorithm that maintained streaming performance under viewport prediction errors. 	
INTERNSHIPS	TikTok Research Intern @ Multimedia Lab, San Diego, USA	2024.05 - 2024.08
	<ul style="list-style-type: none"> Project: Low-latency Cloud VR Gaming; Mentor: Shu Shi Propose the idea of treating various user motions differently in cloud VR gaming and validate it through user study. Develop a cloud VR gaming prototype that achieves comparable QoE to local streaming setups. Propose a partial panorama streaming algorithm that renders 69% more FPS and consumes 78% less network bandwidth. Paper submitted to ACM MobiSys 2025. 	
	DPVR Co., Ltd SDE Intern @ Graphic Group, Shanghai, China	2018.04 - 2019.05
	<ul style="list-style-type: none"> Mentor: Ziyi Xu Develop streaming assistant software for commercial VR headset using C++. 	

- PUBLICATIONS
1. **Lingzhi Zhao**, Ying Cui, Yuhang Jia, Yunfei Zhang, and Klara Nahrstedt. Enhancing Neural Adaptive Wireless Video Streaming via Lower-Layer Information Exposure and Online Tuning. *IEEE Trans. Multimedia*, 2024. (Short version published in *IEEE ICC 2024*)
 2. **Lingzhi Zhao**, Ying Cui, Sheng Yang, and Shlomo Shamai (Shitz). An Optimization Framework for General Rate Splitting for General Multicast. *IEEE Trans. Wireless Commun.*, 2022. (Short version published in *IEEE ICC 2022*)
 3. **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. (Short version published in *IEEE GLOBECOM 2020*)
 4. 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.
 5. **Lingzhi Zhao**, Yongqiang Gui, Yanyan Suo, Sandesh Dhawaskar Sathyanarayana, Ruixiao Zhang, Bin Xu, Gaoting Zheng, Heng Jiang, Shu Shi, and Klara Nahrstedt. Trinity: Streaming First Person Shooting Games from Cloud to VR Headsets. *ACM MobiSys*, 2025, under review.
 6. Beitong Tian *, **Lingzhi Zhao** *, Bo Chen, Haozhen Zheng, Jingcheng Yang, Mingyuan Wu, Deepak Vasisht, and Klara Nahrstedt. AquaScope: SwimTalkie: Effortless Underwater Communication with your SmartPhone. *ACM MobiSys*, 2025, under review. (*: equal contributions)
 7. Beitong Tian *, **Lingzhi Zhao** *, Bo Chen, Mingyuan Wu, Haozhen Zheng, Deepak Vasisht, Francis Y. Yan, and Klara Nahrstedt. AquaScope: Reliable Underwater Image Transmission on Mobile Devices. *ACM SIGCOMM*, 2025, under review. (*: equal contributions)
 8. Yangchen Li, **Lingzhi Zhao**, Tianle Wang, Lianghui Ding, and Feng Yang. Knowledge- and Model-Driven Deep Reinforcement Learning for Efficient Federated Edge Learning: Single- and Multi-Agent Frameworks. *IEEE Trans. Mach. Learn. Commun. Netw.*, 2025. (Short version published in *IEEE GLOBECOM 2024*)

AWARDS AND HONORS	<ul style="list-style-type: none"> • IEEE ICC Travel Grant 2024 • SJTU Outstanding Scholarship 2020, 2021
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ACADEMIC SERVICES	<p>Session Chair for: <i>IEEE ICC 2024</i></p> <p>Reviewers for: <i>IEEE ICME 2024, 2025,</i> <i>ACM MobiHoc 2021,</i> <i>IEEE Trans. Wireless Commun.,</i> <i>IEEE Trans. Commun.,</i> <i>IEEE Trans. Green Commun. Netw.,</i></p>
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