

Junhua Liu

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Education

- The Chinese University of Hong Kong, Shenzhen** Shenzhen, China
Bachelor of Data Science and Big Data Technology, **with Full Tuition Scholarship** Aug. 2020 – May. 2024
- Summer School:** The Chinese University of Hong Kong @ 2022; University of California, Berkeley @ 2023.

Research Interest

- Multimedia System, HCI, Mobile Computing, Internet of Things, Edge Computing, Virtual Reality**

Selected Publications & Pre-prints

- [1] **Junhua Liu**, Ruizhi Cheng, Bo Han, Mallesham Dasari, Fangxin Wang. Semon: Neural-enhanced 3D Video Conferencing. **Submitted to USENIX NSDI, 2024.** The state-of-the-art 3D conferencing system on quality, latency, and loss resistance.
- [2] Zhicheng Liang*, **Junhua Liu***, Mallesham Dasari, Fangxin Wang. Fumos: Neural Compression and Progressive Refinement for Continuous Point Cloud Video Streaming. **Submitted to IEEE VR, 2024.**
- [3] **Junhua Liu**, Yuanyuan Wang, Fangxin Wang, Mallesham Dasari. Video Streaming Innovations with Implicit Neural Codecs. **Submitted to IEEE Network, 2024.** A new subdirection for video streaming. [[Invited Talk at Sensetime](#)]
- [4] Kaiyuan Hu, Haowen Yang, Yili Jin, **Junhua Liu**, Yongting Chen, Miao Zhang, Fangxin Wang. Understanding User Behavior in Volumetric Video Watching: Dataset, Analysis and Prediction. **ACM MM, 2023.** [[Website](#), [Dataset](#), [PDF](#)]
- [5] **Junhua Liu**, Yuanyuan Wang, Mallesham Dasari, Yan Wang, Yufeng Wang, Shuguang Cui, Fangxin Wang. Mobile Volumetric Video Streaming System through Implicit Neural Representation. **ACM SIGCOMM EMS, 2023.** [[PDF](#), [Slide](#)] Extended Version is **submitted to ACM Mobicom, 2024.** [[Full-version PDF](#)]
- [6] Yili Jin, Kaiyuan Hu, **Junhua Liu**, Fangxin Wang, Xue Liu. From Capture to Display: A Survey on Volumetric Video. **ACM Computing Surveys, 2023.** Preprint at [Arxiv:2309.05658](#). [[PDF](#)]
- [7] Kaiyuan Hu, Yili Jin, Haowen Yang, **Junhua Liu**, Fangxin Wang. FSVVD: A Dataset of Full Scene Volumetric Video. **ACM Multimedia Systems, 2023.** [[Website](#), [Dataset](#), [PDF](#)]
- [8] **Junhua Liu**, Boxiang Zhu, Fangxin Wang, Yili Jin, Wenyi Zhang, Zihan Xu, Shuguang Cui. CaV3: Cache-assisted Viewport Adaptive Volumetric Video Streaming. **IEEE VR, 2023.** [The Only Undergraduate Oral Presentation](#). [[Slide](#)]
- [9] Yili Jin*, **Junhua Liu***, Fangxin Wang, Shuguang Cui. Where Are You Looking? A Large-Scale Dataset of Head and Gaze Behavior for 360-Degree Videos and a Pilot Study. **ACM MM, 2022.** [[Website](#), [Dataset](#), [PDF](#)]
- [10] Yili Jin, **Junhua Liu**, Fangxin Wang. Ebublio: Edge Assisted Multi-user 360-Degree Video Streaming. **IEEE VRW, 2022; IEEE Internet of Things Journal (JCR Q1), 2023.** [[Poster](#), [Website](#), [PDF](#), [Code](#)]
- [11] Zeyu Wang, Chengan He, Zhe Yan, Yingke Wang, Jiashun Wang, **Junhua Liu**, Anzhi Shen, Mengying Zeng, Holly Rushmeier, Huazhe Xu, Borou Yu, Chenchen Lu, Eugene Wang. Chang-E: A High-Quality Motion Capture Dataset of Chinese Classical Dunhuang Dance. **Submitted to Eurographics.** Part of [Link](#), project with **Harvard, CMU, Stanford**. [[PDF](#)]
- [12] Kaiyuan Hu, Yongting Chen, Kaiying Han, **Junhua Liu**, Yili Jin, Boyan Li, Fangxin Wang. Hulk: Human-Centered Live Volumetric Video Streaming System. **Submitted to IEEE VR, 2024.** Preprint at [Arxiv:2309.05658](#) [[PDF](#)]
- [13] Zihan Xu, Wenyi Zhang, **Junhua Liu**, Yili Jin, Fangxin Wang, Lian Zhao, Shuguang Cui. Viewport-Aware Adaptive Volumetric Video Streaming. **Submitted to INFOCOM, 2023.** [[PDF](#)]
- [14] Biaolin Wen, **Junhua Liu**, Tianshu Yu, Bowen Zhang. Generative Adversarial Training for RL-based Automatic Agent.
- [15] First Author. Versatile Volumetric Video Procedural Generator. **Manuscript for ACM MMSys, 2024.** [[PDF](#)]
- [16] First Author. Lumos: Edge-Assisted Online 3D Video Analytics using IoT cameras. **Manuscript for Mobicom, 24.**

Research Experience

- Carnegie Mellon University** Pittsburgh, USA
Visiting Intern advised by Prof. Mallesham Dasari and Prof. Anthony Rowe May. 2023 - Aug. 2023
- Future Network of Intelligence Institute** Shenzhen, China
Research Assistant advised by Prof. Fangxin Wang and Prof. Shuguang Cui Dec. 2021 - Now
- SenseTime Research** Shanghai, China
Research Intern advised by Prof. Yan Wang and Yuanyuan Wang Aug. 2022 - Now
- Harvard University** Online
Research Assistant lead by Prof. Eugene Wang. Work with Prof. Huazhe Xu and Prof. Zeyu Wang Mar. 2022 - Jun. 2022
- Shenzhen Institute of Artificial Intelligence and Robotics** Shenzhen, China
Involved dialogue system project lead by Prof. Yan Song and robotics project lead by Prof. Huihuan Qian Jan. 2022 - Feb. 2022

Research Service

- Teaching Assistant:** DDA2001: Introduction to Data Science; STA2002: Statistics, 2021 Fall @ CUHK-Shenzhen
- Reviewer:** IEEE VR 23-24, ACM MM 23, ICASSP 23-24, CHI 23-24, UbiComp/ISWC 23, CSCW 23.