MUFENG ZHU

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EDUCATION

Rutgers, The State University of New Jersey	2022-present
Ph.D. student, Electrical and Computer Engineering (Advisor: Prof. Yao Liu)	
Anticipated Graduation Date	May 2026
M.S., Electrical and Computer Engineering (GPA: 3.96/4.0)	2020-2022
Research interests: 3D Gaussian Splatting, NeRF, Immersive video streaming	
University of Electronic Science and Technology of China	2017-2021
B.S., Information and Communication Engineering	

PUBLICATIONS

2025

- Mufeng Zhu, Mingju Liu, Cunxi Yu, Cheng-Hsin Hsu, Yao Liu. SGSS: Streaming 6-DoF Navigation of Gaussian Splat Scenes. ACM Multimedia Systems Conference (MMsys'25)
- Yuan-Chun Sun, Yuang Shi, Cheng-Tse Lee, **Mufeng Zhu**, Wei Tsang Ooi, Yao Liu, Chun-Ying Huang, Cheng-Hsin Hsu. *TSLA: A DASH Streaming System for Dynamic Multi-Layer 3D Gaussian Splatting Scenes.* ACM Multimedia Systems Conference (*MMsys'25* Best Paper Award)
- Cheng-Tse Lee, Yuang Shi, Yuan-Chun Sun, **Mufeng Zhu**, Wei Tsang Ooi, Yao Liu, Chun-Ying Huang, Cheng-Hsin Hsu. Learning Dynamic Point Cloud Frames with Motion Vectors While Retaining High-quality Rendered Views. Immersive Mixed and Virtual Environment Systems (MMVE'25)

2024

- Mufeng Zhu, Yuan-Chun Sun, Na Li, Jin Zhou, Songqing Chen, Cheng-Hsin Hsu, Yao Liu. *Dynamic 6-DoF Volumetric Video Generation: Software Toolkit and Dataset.* IEEE International Workshop on Multimedia Signal Processing (*MMSP*'24)
- Na Li, **Mufeng Zhu**, Shuoqian Wang, Yao Liu. A Comparative Study of K-Planes vs. V-PCC for 6-DoF Volumetric Video Representation. Immersive Mixed and Virtual Environment Systems (MMVE'24)

2023

- Mufeng Zhu, Yang Sui, Bo Yuan, Yao Liu. Learning-based Homography Matrix Optimization for Dual-fisheye Video Stitching. ACM SIGCOMM Workshop on Emerging Multimedia Systems (EMS'23)
- Shuoqian Wang, Mufeng Zhu, Na Li, Mengbai Xiao, Yao Liu. VQBA: Visual-Quality-Driven Bit Allocation for Low-Latency Point Cloud Streaming. ACM International Conference on Multimedia (MM'23)

PROJECTS

- Efficient Streaming System Design for Gaussian Splatting Scenes on Various Platforms This ongoing project focuses on designing a system for streaming 3D Gaussian Splatting scenes across different platforms, including desktops and mobile devices such as smartphones and laptops. It addresses system challenges introduced by 3D Gaussian Splatting scenes, such as bandwidth, memory, and computation limitations. Currently, the system leverages the unique features of 3D Gaussians, Integer Linear Programming (ILP), and modern HTTP protocols (HTTP/2 and HTTP/3) to deliver fast and high-quality initial rendering views to users. The system is compatible with multiple browsers, including Google Chrome, Mozilla Firefox, and Safari on desktop platforms. Our experiment results are reproducible, and the code will be released soon. The future work on this project will be the application design on mobile devices. Our code is now available at : https://github.com/symmru/SGSS/
 - Publications: MMsys'25
- A Software Toolkit for Dataset Generation of Dynamic 6-DoF Representations This project developed a software toolkit capable of generating datasets for various 6-DoF representations, including (dynamic) point clouds, NeRF-family works, and Gaussian Splatting works. Given any point cloud sequence or dynamic synthetic mesh, this software toolkit is able to generate training and testing datasets for use in NVS models. Additionally, for any dynamic synthetic mesh, the software is also able to generate point cloud sequences that serve as ground truth for point cloud research. The generated datasets have been tested in NeRFstudio using various methods (including gsplat) and 3D Gaussian Splattings. This software is now available now at: https://6-dof-dynamic-content-software.github.io/
 Publications: MM'23, MMSP'24, MMVE'24
- Learning-based Homography Matrix Optimization for Dual-fisheye Video Stitching This project proposed a feature-based stitching methodology for dual-fisheye videos. It utilizes a lightweight neural network to optimize stitching quality across frames without requiring camera parameters. Specifically, the method identifies ORB features in the overlapping regions of two unwarped frames from fisheye videos. The homography matrix between the two unwarped frames is treated as a 3x3 fully connected layer and optimized using the ORB feature pairs. Experimental results show that our stitching achieves better quality than the current state-of-the-art. Our code is now available at : https://github.com/symmu/ Dual-fisheye-video-stitching Publications: *EMS'23*

SKILLS

Programming skills: Python, JavaScript BASH, LATEX, C/C++

Framework & Library: OpenCV, Pytorch, Unity 3D, Blender, Node.JS, NeRFstudio, 3DGS

Platforms: Linux (Ubuntu)

TEACHING EXPERIENCE

Programming Methodology II, Teaching Assistant, Fall'22Virtual Reality & Technology, Teaching Assistant, Spring'23, Spring'24, Spring'25

ACADEMIC EXPERIENCE

Research Assistant at Rutgers Hassan's Research Lab2020-2021Course pojects in The Hong Kong Polytechnic University with Prudential plcSummer 2018

AWARDS

Best Teaching Assistant Award, 2023; UESTC University Scholarship, 2018;