Shuyi Zhou

📞 08037128868   ✉ zhoushuyi495@gmail.com   📍 Tokyo   🔗 ShuyiZhou495

Summary

Research Interests: I am interested in 3D computer graphics and sensor fusion topics, with a particular focus on leveraging LiDAR data and point cloud representation to address related challenges.

Research Experience: My background spans both classical areas of Robotics, such as LiDAR-camera fusion, as well as advanced topics in 3D computer graphics including Neural Radiance Field and Gaussian Splatting. I excel at implementing and optimizing systems, bridging traditional techniques with modern approaches to make 3D reconstruction methods more practical and effective.

Education

The University of Tokyo   Oct 2021 - Sep 2026
- Ph.D. Candidate under the supervision of Professor Takeshi Oishi   Tokyo, Japan
- Master's degree in Sep 2023, with a thesis of "*Implicit Neural Fusion for LiDAR and Camera*"

Shanghai Jiao Tong University   Sep 2017 - Aug 2020
- Bachelor of Science in Electrical and Computer Engineering (ECE) at University of Michigan, Shanghai   Shanghai, China
  Jiao Tong University Joint Institute (UM-SJTU JI)

Work Experience

T2 Inc   Aug 2025 - Sep 2025
Research Engineer at T2, mapping team for autonomous truck service   Tokyo, Japan
- Developed a multi-LiDAR and multi-camera calibration system for autonomous trucks.

CyberAgent, Inc.   Aug 2024 - July 2025
Research Internship at CyberAgent AI Lab   Tokyo, Japan
- Developed hybrid neural rendering system combining Gaussian Splatting with mesh-based methods
- Developed algorithms to represent and generate garments motion with Gaussain splatting representations

The National Institute of Advanced Industrial Science and Technology (AIST)   June 2022 - Aug 2023
Research Assistant at Artificial Intelligence Research Center   Tokyo, Japan
- Developed new methods for LiDAR-camera sensor fusion system
- Set up LiDAR-camera systems, collected datasets, and conducted experimental validation

Publication List

DeMapGS: Simultaneous Mesh Deformation and Surface Attribute Mapping via Gaussian Splatting (SIGGRAPH Asia 2025) [First Author]
- Developed a mesh-guided GS framework for regularized and structured GS representation
- Enabled consistent cross-object parameterization in GS representation

Robust LiDAR-Camera Calibration with 2D Gaussian Splatting (Ra-L, May 2025; Present at IROS 2025) [First Author]
- Proposed a targetless LiDAR-camera calibration method that consolidates various geometric constraints based on 2DGS
- Provided a mathematical analysis of the limitations inherent to the 2DGS for calibration, addressing related issues

G2fr: Frequency regularization in grid-based feature encoding neural radiance fields (ECCV 2024) [Second Author]
- Conducted in-depth analysis of mathematical principles underlying grid-based implicit representations, such as Instant-NGP
- Explained the mechanisms of frequency regularization and proposed a generalized method, G2fR, applicable to various tasks, such as camera pose refinement and few-shot reconstruction

LiDAR-Camera Calibration using Intensity Variance Cost (ICRA 2024) [Second Author]
- Proposed a targetless LiDAR-camera calibration applicable even to 1D LiDAR using the cost function based on intensity variance
- Proposed a simultaneous LiDAR-camera calibration and motion refinement method

INF: Implicit Neural Fusion for lidar and Camera (IROS 2023) [First Author]
- Applied implicit neural representations with diverse sensor inputs to achieve robust sensor fusion and calibration
- Leveraged the differentiability of implicit neural representation to align density fields generated from various sensors

Awards

MIRU Excellence Award 2024; MIRU Student Encouraging Award 2023 & 2025