Yiren Lu

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RESEARCH INTEREST

3D&4D Reconstruction (3DGS, NeRF), 3D&4D Generation, 3D Scene Understanding, 3D Perception

EDUCATION

Case Western Reserve University　　　　　　　　　　　　　　　**Cleveland, OH, USA**
Ph.D. in Computer Science　　　　　　　　　　　　　　　　　　Jan 2024 - Present

- Outstanding Graduate Research Award (2024)
- Kevin J. Kranzusch Fellowship (2024-2025)

University at Buffalo, State University of New York　　　　　　**Buffalo, NY, USA**
M.S. in Computer Science and Engineering　　　　　　　　　　　Aug 2022 - Dec 2023

ShanghaiTech University　　　　　　　　　　　　　　　　　**Shanghai, China**
B.Eng. in Computer Science　　　　　　　　　　　　　　　　　Sep 2017 - Aug 2021

INTERNSHIP EXPERIENCE

BOSCH (Bosch Research North America)　　　　　　　　　　　**Sunnyvale, USA**
Research Scientist Intern　　　　　　　　　　　　　　　　　　　May 2025 – Present
Supervisor: Dr. Xin Ye and Dr. Burhan Yaman
Topic: Gaussian Splatting-assisted BEV Perception

Tencent　　　　　　　　　　　　　　　　　　　　　　　　**Shenzhen, China**
Applied Scientist Intern　　　　　　　　　　　　　　　　　　　Jul 2021 - Jun 2022
Supervisor: Dr. Zhisheng Wang
Topic: Fast Human 3D Motion Capture Pipeline for Live Streaming

SELECTED PUBLICATIONS (* DENOTES EQUAL CONTRIBUTION)

1. **Yiren Lu**, Yunlai Zhou, Yiran Qiao, Chaoda Song, Jing Ma, Yu Yin, "Segment then Splat: Unified 3D Open-Vocabulary Segmentation via Gaussian Splatting", accepted to Conference on Neural Information Processing Systems (NeurIPS), 2025. [Project] [Paper]

2. Aly El Hakie*, **Yiren Lu***, Yu Yin, Michael W. Jenkins, Yehe Liu, "Fix False Transparency by Noise Guided Splatting", accepted to Conference on Neural Information Processing Systems (NeurIPS), 2025.

3. **Yiren Lu**, Yunlai Zhou, Disheng Liu, Tuo Liang, Yu Yin, "BARD-GS: Blur-Aware Reconstruction of Dynamic Scenes via Gaussian Splatting", in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2025. [Project] [Paper] [Code]

4. **Yiren Lu**, Jing Ma, Yu Yin, "View-consistent Object Removal in Radiance Fields", in ACM International Conference on Multimedia (MM), 2024. [Project] [Paper]

5. Zhe Hu, Tuo Liang, Jing Li, **Yiren Lu**, Yunlai Zhou, Yiran Qiao, Jing Ma, Yu Yin, "Cracking the Code of Juxtaposition: Can AI Models Understand the Humorous Contradictions", in Conference on Neural Information Processing Systems (NeurIPS Oral), 2024. [Project] [Paper] [Code]

6. Zitong Zhan, Xiangfu Li, Qihang Li, et al., "PyPose v0.6: The Imperative Programming Interface for Robotics", in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) workshop, 2024. [Project] [Paper] [Code]

7. Taimeng Fu, Shaoshu Su, **Yiren Lu**, Chen Wang, "iSLAM: Imperative SLAM", in IEEE Robotics and Automation Letters (RA-L), 2024. [Project] [Paper] [Code]

8. **Yiren Lu**, Huawei Wei, "End to End Face Reconstruction via Differentiable PnP", in European Conference on Computer Vision (ECCV) Workshop, 2023. [Paper]

9. Xiangyang Zhi, Jiawei Hou, **Yiren Lu**, Laurent Kneip, Sören Schwertfeger, "Multical: Spatiotemporal Calibration for Multiple IMUs, Cameras and LiDARs", in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022. [Paper] [Code]

RESEARCH EXPERIENCES

Blur-Aware Reconstruction of Dynamic Scenes via Gaussian Splatting　　　**Jun 2024 - Nov 2024**

VU Lab, Case Western Reserve University.
Research Assistant (Advisor: Prof. Yu, Yin)

- Proposed BARD-GS, a blur-aware dynamic scene reconstruction framework, to tackle challenges posed by blurry inputs and imprecise camera poses.

- Decoupled object motion blur from camera motion blur and modeled each separately in an explicit manner, resulting in a substantial improvement in reconstruction quality within dynamic regions.

- A new real-world motion blur dataset is proposed for evaluating the novel view synthesis performance under real-world blurry scenarios.

View-consistent Object Removal in Radiance Field　　　**Oct 2023 - Apr 2024**

VU Lab, Case Western Reserve University.
Research Assistant (Advisor: Prof. Yu, Yin)

- Proposed a novel Radiance Field inpainting method that requires inpainting only one reference view and automatically propagates the inpainted content to all other views, which significantly enhances efficiency and consistency across multiple views.

- Designed a directional variants generation module to adjust the appearance of projected views to enhance the photorealism of the synthesized views.

- A fast robust multi-view segmentation approach is proposed to facilitate precise location and removal of objects.

iSLAM: Imperative SLAM　　　**Mar 2023 - Oct 2023**

SAIR Lab, University at Buffalo.
Research Intern (Advisor: Prof. Chen Wang)

- Proposed a novel self-supervised learning framework for SLAM, enabling mutual correction between the front-end and back-end. This cooperative symbiosis fosters geometric knowledge learning in the front-end and accuracy improvement in the back-end, thereby enhancing the system's overall performance.

- Designed an IMU denoising network integrated with IMU pre-integration, combined with a learning based Visual Odometry (VO) to serve as front-end. A pose-velocity graph optimization (PVGO) is used to serve as back-end. This system is used to verify the proposed framework.

- By applying iSLAM, the front-end odometry and IMU networks are improved by an average accuracy of 22% and 4%, respectively, while the back-end also experienced a 10% enhancement.

Multical: Spatiotemporal Calibration for Multiple IMUs, Cameras and LiDARs　　　**Jul 2020 - Jul 2021**

The MARS Lab, School of Information Science and Technology, ShanghaiTech University.
Research Intern (Supervisor: Prof. Sören Schwertfeger)

- Designed an algorithm to calculate the transformation between LiDAR and the arbitrary target using the geometric and intensity information captured by LiDAR. Finally reached a 0.71mm transformation error and 0.003rad rotation error in real word when estimating the pose of the AprilGrid board.

- Conducted the real-world temporal calibration experiment, which showed a 0.003ms time offset error when there was a 3ms artificial delay on IMU data.

- Constructed the calibration platform with four cameras and two LiDARs, and responsible for data collection.

- Used Gazebo to simulate the data collection process.

PROFESSIONAL SERVICES

Conference/Journal Reviewer

CVPR, ICCV, NeurIPS, AAAI, ACM MM, WACV, RA-L