YIDAN GAO

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EDUCATION

New York University, New York, USA 09.2024 - Current
PhD Student in Courant Computer Science

ETH Zurich, Zurich, Switzerland 09.2020 - 05.2024
Master's Student in Mechanical Engineering, 5.4 / 6.0

Tongji University, Shanghai, China 09.2016 - 07.2020
Bachelor's Degree in Engineering Mechanics, 91 / 100, Top 2 % **China National Scholarship**

Israel Institute of Technology, Haifa, Israel 06.2019 - 08.2019
Exchange Student in Computer Science **CSC Scholarship**

PUBLICATIONS

Robust Incremental Structure-from-Motion with Hybrid Features ECCV 2024

- Integrated structural features (points, lines, vanishing points, point-line associations, etc) within the context of incremental SfM, leveraging classic SfM software COLMAP and line mapping library LIMAP.
- Enhanced pose accuracy across all stages of the SfM pipeline, including registration, triangulation, and bundle adjustment, and achieved better robustness system-wide.

RESEARCH PROJECTS

Improving 3D Line Reconstruction Using SfM Point Cloud 05.2022 - 09.2022
Computer Vision and Geometry Group (CVG), ETH Zurich Advised by Prof. Marc Pollefeys

- Proposed a novel 3D line fitting and merging methods taking sparse depth as input in place of the per-pixel depth map, e.g., depth inferred from Structure-from-Motion point cloud.
- Exploited point track information and uncertainty from the SfM input, and significantly improved the completeness and accuracy of the 3D line reconstruction.

COLMAPSLAM - An offline Python SLAM Using COLMAP 02.2022 - 07.2022
Computer Vision and Geometry Group (CVG), ETH Zurich Advised by Prof. Marc Pollefeys

- Proposed an offline Python SLAM pipeline by leveraging the advantages of COLMAP and ORB-SLAM.
- The new pipeline is modular and highly extendible, with faster speed than COLMAP, richer map than ORB-SLAM, and comparable or better trajectory accuracy than both.

Environment Mapping for Large-Scale Teleoperation 10.2021 - 12.2021
Robotic Systems Lab (RSL), ETH Zurich Advised by Prof. Marco Hutter

- Proposed a volumetric mapping pipeline that creates a 3rd-person-view colored map and mesh around “heap”, an excavator, by fusing real-time data from the onboard camera and lidar.

ACTIVITIES

ETH Robotics Summer School 07.2021
Team Lead in mapping and localization. Finished in 3rd place in the search and rescue challenge.

SKILLS AND PROFICIENCY

Languages Chinese (Native), English (C1), German (A2)
Operating Systems Windows, Linux
Programming C/C++, Python, Git, ROS, MATLAB, Docker