Dongyue Lu

Curriculum Vitae

Department of Informatics
Technical University of Munich
(+49) 1626501677
dongyue.lu@tum.de
My Webpage
Github

Research Interest

3D Computer Vision, Robotic Perception, SLAM.

Education

2020–2023 (expected) **Master of Science, Robotics, Cognition, Intelligence**, *Technical University of Munich*, Munich, Germany.
GPA:1.4/1.0

2015–2020 : **Bachelor of Engineering, Vehicle Engineering**, *Tongji University*, Shanghai, China.
GPA:4.44/5.0

Research Experience

MSc Student ***Smart Robotics Lab, Technical University of Munich***, May, 2022 - Present.

Thesis: Dynamic Object Tracking and Reconstruction with Dense Optical Flow, *completion expected in March 2023*.

Developing a novel joint camera and dynamic object pose estimation and shape reconstruction framework with a dense optical flow estimator and a differentiable dynamic bundle adjustment layer. (*Introduction*)

Advisor:Dr.Xingxing Zuo, Prof.Dr.Stefan Leutenegger

MSc Student ***Visual Computing Lab, Technical University of Munich***, April, 2021 - March,2022.

Project: End-to-end Learned Multi-View Stereo Reconstruction with Transformers.

Proposed an end-to-end multi-view stereo method that fuses sparse TSDF volumes incrementally regressed by 3D sparse convolution with a novel transformer fusion module to achieve coherent reconstruction. Training and experiments on ScanNet proved that this method has real-time efficiency and better performance in extreme cases compared to state-of-the-art methods. (*Project Page*)

Project: Shape Completion with Meso-Skeleton Learning.

Proposed a novel point cloud completion method leveraging the intermediate meso-skeleton of point cloud to maintain global topology. Experiments on ShapeNet proved that using meso-skeleton, this method can effectively capture the global structure and has a better completion effect than traditional frameworks. (*Project Page*)

Advisor:Dr.Yinyu Nie, Prof.Dr.Matthias Nießner

BSc Student ***School of Automotive Studies, Tongji University***, January, 2020 - June, 2020.

Thesis: Research on Vehicle-mounted Integrated Positioning System Assisted by Visual Information.

Proposed a state estimation method that fuses GNSS, IMU, and camera-detected lane information using Kalman filtering. Deployed this method on an unmanned sweeper and verified that visual information can help effectively localize the sweeper when the GNSS signal is weak and the IMU drifts.

Advisor:Yishi Lu, Prof.Dr.Lu Xiong

Selected Projects

January,2022 – March,2022 ***Path Planning for UAV Avalanche Rescue***, *Autonomous Aerial Systems group, Technical University of Munich*.
Deployed a UAV equipped with an avalanche beacon in a simulation environment. Proposed different path planning algorithms related to geometry and potential field for victim search in avalanche scenarios, and compared the performance of these methods through a series of experiments. (*Project Page*)

Advisor : Christoph Killing, Prof.Dr.-Ing.Markus Ryll

June,2021 – August,2021 ***Stereo Reconstruction***, *3D AI Lab, Technical University of Munich*.
Applied different keypoint detectors (SIFT, ORB) and dense stereo matching methods (Block matching, Semi-global matching) to reconstruct 3D scenes and compared their performance. (*Project Page*)

Advisor : Yuchen Rao, Prof.Dr.Angela Dai

2019 – 2020 ***Brake Force Distribution Adjustment and Clutch Control Based on Servo Motors***, *TJU Racing Team, Tongji University*.
Proposed a method to control the clutch of a racing car based on the position of a servo motor and a high-resolution potentiometer switch. Improved the accuracy of brake distribution based on pulse modulation.

Advisor : Prof.Dr.Jun Deng, Prof.Dr.Liguang Li

Fellowships & Awards

2021 ***Runner-up*** Tencent AIMIS Medical Artificial Intelligence Algorithm Competition

2020 ***2nd Prize*** "Huawei Cup" The 17th China Post-graduate Mathematical Contest in Modeling

2019 ***Champion*** Formula Student Combustion China(TJU Racing Team)

2019 ***4th Place*** Student Formula Japan(TJU Racing Team)

2018 ***4th Place*** Student Formula Japan(TJU Racing Team)

2018 ***1st Prize*** Formula Student Combustion China(TJU Racing Team)

2017 ***2nd Prize*** China Undergraduate Mathematical Contest in Modeling

2017 ***3rd Prize*** Tongji University Mathematical Contest in Modeling

2019 ***3rd Prize*** Tongji Scholarship of Excellence

2018 ***1st Prize*** Tongji Scholarship of Excellence

2017 ***3rd Prize*** Tongji Scholarship of Excellence

Working experience

June 2019 – October 2019 ***Schaeffler, Commercial Category Intern***, *Shanghai, China*.
Processed part data from suppliers with machine learning classification algorithms (k-means, random forest).

Position of Responsibility

2019-2024 **Assistant Engineer**, *China Society of Automotive Engineers*.

2017-2019 **Head of Chassis**, *TJU Racing Team*.

Skills

Computer Skills: Python, C++, Git flow, ROS, etc.

Languages: English(fluent), Chinese(native), German(basic), Japanese(basic)