

Chengwei Zhang

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RESEARCH INTERESTS

Robotic Navigation: Efficient Path Planning and Decision Making, Learning-based Exploration, Visual SLAM.

Autonomous Driving: 3D Scene Reconstruction, Perception and Sensor Fusion.

EDUCATION

Peking University, Beijing, China

Sept 2021 - Present

Bachelor of Science in Robotics and Mechanics (Dual-degree)

Cumulative GPA: 3.79/4.00 Rank: 2/22

Expected Graduation: July 2025

Publications

- Chensheng Peng*, **Chengwei Zhang***, Yixiao Wang, Chenfeng Xu, Yichen Xie, Wenzhao Zheng, Kurt Keutzer, Masayoshi Tomizuka and Wei Zhan, **DeSiRe-GS: 4D Street Gaussians for Static-Dynamic Decomposition and Surface Reconstruction for Urban Driving Scenes**, *Submitted to CVPR 2025*

RESEARCH EXPERIENCE

Efficient Active Visual SLAM Utilizing Terrain Information

Chang Liu's group, Autonomous Robots Lab, Peking University, China

July 2023 - September 2024

- Proposed a hierarchical active SLAM structure with a reinforcement-learning-based global goal planner and a supervised-learning-based local path planner.
- Designed a high-efficiency multi-resolution global map encoder for the global planner and a terrain-and-semantic-based local planner.
- Conducted on real-world dataset (Gibson Dataset) and showcased the proposed algorithm improved the model's training efficiency and sensitivity to terrain changes.

Soft Robotics Motion Control and Reinforcement Learning

Ke Liu's group, Peking University, China

May 2024 - Present

- Developed and validated models of soft robots in the Mujoco simulation environment.
- Studied reinforcement learning principles and implemented reinforcement learning-based control for soft robotics using the SAC algorithm.

3D Gaussian Splatting for Dynamic Scene Reconstruction and Dynamic-Static Decomposition

(In collaboration with second-year PhD student Chengsheng Peng)

Masayoshi Tomizuka's group, Mechanical Systems Control Lab, UC Berkeley, the U.S.

July 2024 - November 2024

- Proposed DeSiRe-GS, a self-supervised gaussian splatting representation for effective static-dynamic decomposition and high-fidelity surface reconstruction, and tested the algorithms on Waymo Open Dataset.
- Developed a dynamic model based on dinov2 feature dissimilarity for dynamic-static decomposition.
- Designed a temporal geometric consistency loss to enforce consistent geometry reconstruction and worked extensively on surface reconstruction and visualization.

LANGUAGE PROFICIENCY

TOEFL iBT: 107/120

Listening: 27 — Reading: 28 — Speaking: 26 — Writing: 26

AWARDS

- Boeing Scholarship (Third Prize), College of Engineering, Peking University 2022
- Merit Student of Peking University 2023
- China Optics Valley Scholarship 2023

SKILLS

- Programming Languages:** C, C++, Python, Shell, MATLAB
- Software and Tools:** Linux, PyTorch, ROS, LaTeX, Gazebo, Mujoco, SolidWorks