Chengwei Zhang

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RESEARCH INTERESTS

Robotic Navigation: Path Planning and Decision Making, Learning-based Exploration, SLAM.
Perception for Autonomous Driving: Scene Reconstruction, Scene Understanding, Efficient Perception

EDUCATION

Peking University, Beijing, China   September 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**, *accepted by 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 E-MATE SLAM, a novel hierarchical active SLAM structure with a reinforcement-learning-based global goal planner and a supervised-learning-based local path planner.
- Developed a multi-resolution global map encoder to optimize global planning efficiency and incorporated terrain and semantic information for adaptive local path planning.
- Conducted experiments on the Gibson Dataset and demonstrated that the proposed algorithm significantly enhanced training efficiency and terrain adaptability.

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.
- Explored fundamental principles of reinforcement learning, and implemented Soft Actor-Critic (SAC) algorithm for soft robotic motion control, achieving stable execution in simulation.

3D Gaussian Splatting for Driving Scene Reconstruction and Static-Dynamic Decomposition
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 and KITTI Dataset.
- Designed a dynamic model based on dinov2 feature dissimilarity to draw accurate dynamic object masks.
- Introduced 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, 2024
- China Optics Valley Scholarship   2023
- Huatai Securities Science Technology Scholarship   2024

SKILLS

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