Xuyang Zhao

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Education

Beijing Institute of Technology (BIT) — Beijing, China
M.Sc. in Control Engineering; ***Grade: 85.26/100*** — *Sep 2021 – Jun 2024 (Expected)*
Interests: *Robot Exploration*, *Lidar-SLAM*. Advisor: Prof. Chengpu Yu

China University of Mining & Technology (CUMT) — Beijing, China
B.Eng. in Measurement and Control Technology; ***Grade: 88.52/100*** — *Sep 2017 – Jun 2021*
Outstanding Graduates(Top 5%); Excellent Bachelor Thesis First Price(Top 1%)

Publications

TDLE: 2-D LiDAR Exploration With Hierarchical Planning Using Regional Division
Xuyang Zhao, *Chengpu Yu, Erpei Xu, Yixuan Liu* — *IEEE CASE 2023 (Accepted)*
- Proposed an exploration system which can run at high frequencies (>100Hz) on low-power edge platforms, while offering up to significant efficiency improvement. *Paper* | *Code* | *Video*

Patents

An Indoor Mapping Method And Device With Autonomous Exploration, Chinese Patent 20211114092.1, 2021.

An 3D Inversion Positioning Method Based on Ultra-wideband (UWB), Chinese Patent 202110893866.X, 2021.

Research Experience

Indoor Navigation and Detection Based on Air-Ground Platform Collaboration — *Code* | *Video*
National Key R&D Program — *Oct. 2021 – Now*
- Developed a LiDAR exploration system which can conduct indoor surveys, helping to inspect the internal environment and find trapped people in disaster relief scenarios.
- The whole process requires no remote control or pre-specified routes, as the decision is made entirely by the on-board processing unit and drones can return autonomously after completion.

Collaborative Perception and Environment Modeling of Unmanned Swarms
Industry-Academia Collaborative Innovation Fund — *Jul. 2022 – Now*
- Built an unmanned swarm that support any number of intelligent agents for efficient collaborative exploration.
- Built small drones from scratch, established UDP communication to exchange custom compact messages, and designed a scalable dynamic task allocation strategy.

ROS Smart Car Racing — *Video (in Sim Race)*
China's 15th National Collegiate Smart Car Race — *May 2020 – Sept. 2020*
- Besides device adjustment and tuning, we (1) Correct the distortion of LiDAR scans; (2) Add strong constraints for obstacle avoidance in local planner; (3) Construction of LiDAR-IMU fusion odometry.
- Successfully advanced in the simulation competition of the North China division and subsequently won the National Second Prize in the final race.

Work Experience

Phigent Robotics — *phigent.ai*
Autonomous Driving R&D Intern — *April 2023 – May 2023*
- Build a simulation platform with Carla and OpenDDS to access LiDAR sensing and post-processing algorithms for prototype testing.

Skills

Language: English (TOEFL: 101, CET-6: 551), Chinese (Native)

Programming: C/C++, Python, LaTeX

Robotics Dev.: ROS, PX4, Gazebo, PCL, Eigen, Ceres, etc.

Dev. Tools: Git, Linux & Shell, Docker, etc.