Yuanhong Yu

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EDUCATION

Northwestern Polytechnical University - Computer Science and Technology Bachelor
School of Computer Science
Sep 2020 - Jun 2024

- GPA:3.88/4.1 Ranking: 17/230 (First Five Semesters)
- Comprehensive Ranking: 11/230
- CET6:495

HONORS & AWARDS

2020-2021 National Scholarship	2021.12
2020-2021 First Class Scholarship for Outstanding Students of Northwestern Polytechnical University	2021.9
2020-2022 Samsung Scholarship	2022.9
2020-2022 Huawei "Smart Base" Scholarship	2022.9
ICRA Robomaster Artificial Intelligence Challenge International Third Prize	2022.5
2021 China Robot Competition FIRA Small Group-Simulation Group 11vs11 Champion	2022.4
Second prize in the Northwest Division of 2022 WeChat applet application development competition	2022.7
The 23rd China Robotics and Artificial Intelligence Competition Artificial Intelligence Innovation Competition First Prize	2021.12
2021 23rd National Robot Championship: First Prize of Robot Intelligent Decision Algorithm	2021.10

SKILLS LIST

- Proficient in several programming languages, including C++, Python, and Java, and have completed several projects utilizing these languages.
- Familiar with Linux and ROS, and have experience using tools such as Gazebo, CMake, OpenCV, PCL, Unity, and others.
- Proficient in using Git for version control and have experience managing teams and collaborating on projects.
- Familiar with HTML, CSS, JavaScript, Vue, and other web development languages, and I have experience working on web development projects.
- Able to use PyTorch and have experience writing deep learning code.
- I worked in a laboratory for one year and gained valuable experience in reading research papers and reproducing code.

PROJECT EXPERIENCE

Robomaster Artificial Intelligence Challenge - Head of the positioning and navigation group
Nov 2021 - May 2022

The Robomaster Artificial Intelligence Challenge involves tasks such as robot positioning, navigation, autonomous decision-making, visual recognition, and autonomous confrontation.

- The positioning module utilizes Cartographer to build maps and employs the AMCL algorithm to fuse visual identification information for accurate positioning.
- Due to limitations in the competition venue environment, the robots are equipped with lidars at different heights to fuse point cloud information from multiple radars and achieve more accurate positioning.

- The custom costmap incorporates the robot's path and enemy robots detected by the field sensor into the cost map, enabling collaborative planning for the robots, and providing decision-makers with more viable strategies.
- The TEB planner for local path planning has undergone numerous parameter adjustment tests to ensure the robot's actual running speed and smoothness during operation.

V5robot WeChat applet - Project leader Mar 2022 - Jun 2022

The V5robot Wechat Program serves as a platform for promoting robot education, with its main features being strong interactivity, ease of use, and a balance between depth and breadth of content. It includes multiple modules such as navigation, vision, and control, as well as small games to enhance entertainment value. Additionally, the V5robot Mini Program also serves as a recruitment platform for the Northwestern Polytechnical University Soccer Robot Base.

- As the project leader, my responsibilities in the early stages of the project mainly included requirement analysis and task allocation. In the later stages, I took charge of developing the navigation module, the robot model display module, and the recruitment module. Furthermore, I conducted a series of maintenance work for the Mini Program in the later stages.
- In the navigation module, the classic global path planning algorithm is visualized with the canvas.
- The robot model display module successfully utilized Three.js to visualize a large number of robot parts and the overall 3D model of the robot.
- In the community recruitment module, the main tasks completed were database construction and a series of front-end page designs.

RESEARCH EXPERIENCE

ASGO-3D laboratory internship Jan 2022 - Present

Since January 2022, I have been interning at the Multi-Domain Multi-Dimensional Information System Research Group of the National Engineering Laboratory of Space, Space, Earth and Sea Integrated Big Data Application Technology (ASGO) at Northwestern Polytechnical University. During this time, I have been studying two topics: "3D target pose estimation based on point-to-feature" and "image correspondence generation based on diffusion model".

- A position estimation algorithm based on PPF feature and center point voting was reproduced and tested on the U3OR dataset.
- Attempting to generate correct matches from a noisy matching set based on the Diffusion Model (DDPM) .

Societies and organizational experiences

Group V5, football robot base, Northwestern Polytechnical University - The person in charge Positioning navigation group Mar 2021 - Present

- Responsible for the development of positioning and navigation modules in multiple robot competitions
- As the head of V5 recruitment, I have organized recruitment activities for many times.

Northwestern institute of technology student union - Key members Department of Culture and Sports Sep 2020 - Sep 2021

- During my tenure, I organized many school/college-level cultural and sports activities.
- Won awards in many cultural and sports activities.