

# Yuanhong Yu

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## 🎓 EDUCATION

**Northwestern Polytechnical University** - Computer Science and Technology Bachelor  
School of Computer Science

Sep 2020 - Jun 2024

- GPA:3.87/4.1 Ranking: 21/230 (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 C++, Python, Java and other languages, with few project experiences.
- Familiar with linux and ROS, able to use Gazebo, CMake, OpenCV, PCL, Unity and other tools, and have experience in robot competition.
- Proficient in git version management tools and experience in team management and cooperative development
- Familiar with html, css, js, vue and other languages, and have experience in web development.
- Able to use pytorch and have experience in writing deep learning code
- I worked in the laboratory for one year and had rich experience in paper reading and code reproduction

## 📁 PROJECT EXPERIENCE

**Robomaster Artificial Intelligence Challenge** - Head of the positioning and navigation group

Nov 2021 - May 2022

In Robomaster artificial intelligence challenge, robots need to realize tasks such as positioning, navigation, autonomous decision-making, visual recognition, autonomous confrontation, etc.

- The positioning module uses cartographer to build maps, and based on AMCL algorithm, combined with visual identification information for fusion positioning
- Due to the limitation of the competition venue environment, lidars are installed at different heights of robots to fuse the point cloud information obtained by multiple radars to obtain better positioning effect.
- The custom costmap adds the robot path and the enemy robot captured by the field sensor to the cost map,

realizes simple robot collaborative planning, and provides more feasible strategies for decision makers.

- The teb planner for local path planning has carried out a large number of parameter adjustment tests to ensure the actual running speed and smoothness of the robot.

#### **V5robot WeChat applet** - Project leader

Mar 2022 - Jun 2022

As a robot education promotion platform, V5robot applets are characterized by strong interactivity, easy to use, and equal emphasis on depth and breadth of content. They include robot theoretical knowledge of navigation, vision, control and other modules, and add small games to enhance interest. At the same time, V5robot applets also serve as a new recruitment platform for the football robot base of Northwestern Polytechnical University.

- As the project leader, he is mainly responsible for the basic work such as requirement analysis and task assignment in the early stage of the task. In the later stage, he is mainly responsible for the function development of navigation module, the function development of robot model display module and the development of new recruitment module. In the later stage, he has carried out a series of maintenance work on small programs.
- In the navigation module, the classic global path planning algorithm is visualized with the canvas.
- In the robot model display module, the successful use of threejs completed a large number of robot parts and robot overall 3D model visualization.
- In the community recruitment module, the database construction and a series of front-end page design are mainly completed.

## RESEARCH EXPERIENCE

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### **ASGO-3D laboratory internship**

Jan 2022 - Present

From January 2022 to the present, in 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), Northwestern Polytechnical University, conducted scientific research internships, and successively studied the two topics of "3D target pose estimation based on point-to-feature" and "image matching based on diffusion model"

- A position estimation algorithm based on PPF feature and center point voting is rediscovered and tested on U3OR and other data sets.
- A 7dof pose estimation algorithm based on center point voting is proposed (under research)
- Based on the probabilistic diffusion model (DDPM), try to generate correct matching from noise matching (under research)

## Societies and organizational experiences

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**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, he has organized recruitment activities for many times.

**Northwestern institute of technology student union** - Key members Department of Culture and Sports

Sep 2020 - Sep 2021

- During his tenure, he organized many school/college-level cultural and sports activities
- Won awards in many cultural and sports activities