Wang Shuai

Research Interest: SLAM, Computer Vision and Robotics Vision, Robotics, Artificial Intelligence

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Educational Background

09/2021 - 07/2025 **Sun Yat-sen University (985&211 Project)**

Major: Electronics and Communications Engineering

GPA: 3.8/4.0

Core courses: Linear Algebra (96/100); Data Structures and Algorithms (94/100); Intelligent Electro-Optical Vision Sensing (98/100); Image Processing Laboratory (98/100); High-level Programming and Application (95/100)

Research Experiences

05/2024 - Present **Rapid Adaptive Semantic Map Update in Construction Site Scenarios**

Supervisor: Wang Liang

- In the construction site scenario, for path planning of carts transporting materials, we need to integrate current map information. Construction site layouts can change slightly based on progress, making traditional methods costly as they require frequent remapping, especially in unchanged areas. Our goal is to eventually update prior maps quickly and locally by integrating semantic information.
- We combined 3D object detection to construct a prior semantic map. Following this, we analyzed the advantages of utilizing the semantic map for rapid localization. Finally, we aim to quickly update the prior semantic map using both images and point clouds for small-scale adjustments. Currently, we are collaborating with China State Construction Engineering Corporation (CSCEC) to conduct on-site experiments at the Baiyun Airport Terminal 3.
- As the primary responsible person, took charge of conducting literature review, determining research direction, research methods, and programming.

01/2024 - 06/2024 **Drone Positioning Information-Assisted Reinforcement Learning Optimization Framework for IoT Data Collection**

Supervisor: Sun Xinghua

- Used Drones for assisted data collection and localization to cope with the problems of insufficient infrastructure coverage, the dynamics and uncertainty of the data collection process and sensor locations in the Internet of Things (IoT).

- Proposed a framework to jointly optimize the data collection and device positioning performance of unmanned aerial vehicles (UAVs), thereby significantly improving system performance.
- Participated in paper writing and code programming.

01/2024 - 04/2024 **Completed High-precision Lamination of COMS and Fiber Optic Panels Using a Vision System in a Coupling Project with Huawei**

Supervisor: Wang Liang

- Took charge of positioning and error detection in laminating processes using computer vision; took responsibilities for the software debugging part using a robotic arm based on Raspberry Pi to complete the hardware setup.
- Been the first inventor of the patent.

10/2023 - 01/2024 **Autocorrelation Sidelobe Suppression in MIMO Radar OFD-LFM Waveforms**

Supervisor: Guo Rui

- Explored the effect on autocorrelation sidelobe suppression by further dividing the OFD-LFM waveform into inhomogeneous time widths and bandwidths.
- The final experimental results indicated that the autocorrelation sidelobes of the MIMO radar were further suppressed.
- Published a first-author conference paper.

Work Experience

02/2024 - 08/2024 **30 Days of Technology**

Computer Vision Engineer, Research and Development (R&D) Department

- Led the group responsible for completing the computer vision part of the vision-based high-precision patch coupling machine.
- Been the first inventor of the patent and shared results at the International Congress of Intelligent Industries.

Publications

09/2024 First Author, Shuai Wang, *Autocorrelation Sidelobe Suppression in MIMO Radar OFD-LFM Waveforms*, published on 2024 7th International Conference on Electronics Technology, 979-8-3503-6394-4/24/$31.00 ©2024 IEEE

Others

Academic Activities: Participated in the affective computing of student motivation according to hand-raising videos.

Collaborated with the School of Pharmacy to propose a dataset of anti-tuberculosis molecules and to construct a new architecture for molecular property prediction on small sample datasets, mainly combining meta-learning and multimodal characterization.

Participated in the Ninth National Student Biomedical Engineering Innovation Design Competition with School of BioMedical Engineering on Faraday Wave, took responsibilities for the program analysis part, used matlab for simulation.

Skills: Matlab, Python, C++, HFSS

Honors

National Level: Third Prize of Asia-Pacific Regional Mathematical Modeling Competition in 2023

Provincial Level: First Prize of National Electronic Design Competition in 2023

Second Prize of National Integrated Circuit Innovation Competition Feiteng Cup South China Region in 2023

Third Prize in National University Student Mathematical Modeling Competition in 2022

School Level: Scholarship for Outstanding Students of Sun Yat-sen University Second Prize in 2023

Excellent Student Leader of School of Electronics and Communication Engineering in 2023

Second Prize of Electronic Design Competition, School of Electronics and Communication Engineering in 2022

First Place of Sun Yat-sen University Freshman Cup Soccer League in 2022