Zelong Xu

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EDUCATION

South China University of Technology **Sep 2018 - June 2022**

Bachelor of Engineering (Major in Information Engineering) **Guangzhou**

WORK EXPERIENCE

Guangdong Epropulsion Technology Co., Ltd. **July 2022 - present**

Embedded Software Engineer **Dongguan**

- Chief Developer of MPU and Internet of Boat
- Masterfully engineered and implemented a range of essential software functionalities using Linux and ROS systems, including Over-The-Air (OTA) updates, comprehensive ship data integration and reporting, and sophisticated navigation log systems.
- The systems developed contributed significantly to the advancement of maritime operations' intelligence, enabling users to conveniently monitor the current status and usage of their vessels.

RESEARCH EXPERIENCE

Undergraduate Thesis:

Fine-grained Classification of Bone Marrow Cells Using Deep Learning **Nov 2021 - Jun 2022**

- Utilized the Pytorch framework
- Evaluate and contrast three cell classification algorithmic models: the Resnet50, Pairwise Interaction Network, and the Attention Pyramid Model
- Conducted an analysis of diverse data augmentation strategies, encompassing conventional methods, Progressive GAN, and Style GAN2, to ascertain their impact on model performance.
- Pyramid Model with the advanced features of Style GAN2, culminating in an improvement in the fine-grained classification accuracy of bone marrow cells

SCUT Robotics Lab - RoboMaster National University Student Robot Competition

Embedded Team Member **Sep 2019 - Aug 2020**

- Chief developer in Engineer robotic vehicle for the RoboMaster competition.
- Implemented motion control for the robot's chassis and upper structures using CAN and serial communication protocols combined with cascaded control systems.
- Utilized Coppeliasim simulations and finite state machine algorithms for automating the ammunition reloading process.

Vice Captain & Embedded Team Leader **Sep 2020 - Aug 2021**

- Spearheaded the development of a robotic arm as the Vice Captain and Embedded Team Leader.
- Achieved simulation of the six degrees of freedom in the robotic arm's joint movements using a combination of Coppeliasim simulations and Matlab computations.
- Enhanced the arm's motion smoothness using cascaded control systems and polynomial interpolation algorithms.

All terrain unmanned epidemic prevention robot based on cantilever six wheel chassis **May 2020 - May 2021**

National College Students' Innovation and Entrepreneurship Training Program

- Chief software developer of an innovative all-terrain unmanned epidemic prevention robot, a project in the field of robotic epidemic response.
- Responsible for the selection of the robot's main controller and sensors, aligning with the project's functional requirements.
- Employed cascaded control systems to masterfully orchestrate the movement of the robot's chassis and its epidemic prevention disinfection mechanism, ensuring seamless operation in diverse environmental conditions.

ACADEMIC PROJECTS

Computer Vision-Based Study Room Seat Availability System **Mar 2021 - June 2021**

- Chief developer in vision detection
- Applied the YOLOv4 model for object detection, training the model to accurately identify occupied and available seats.
- Integrated detection results into a database, which were then displayed on a mobile application, providing users with real-time information about seat availability.

Tigery – Intelligent Logistics Transport Unit **Apr 2021 - Aug 2021**

- Enhanced an existing manually operated robotic arm by installing additional equipment, including laser lidar, to advance its capabilities.
- Integrated Google's open-source Cartographer library for precise location mapping, crucial for the robot's navigational accuracy.
- Utilized the Navigation stack in ROS for strategic path planning and velocity computation, vital for smooth navigation.
- Successfully implemented the system to automatically calculate and transmit linear and angular velocities to the lower-level machinery, achieving full automation in grasping and transportation tasks.

Prize-awarding robot for Internet+ Event **Nov 2020**

- Led a project to refurbish a robot for the prestigious Internet+ award ceremony, tasked with delivering trophies on stage.
- Successfully programmed and calibrated the robot to flawlessly execute the predefined procedure for trophy handover.
- Rapidly adapted to project requirements, ensuring top-notch execution within a tight deadline. Implemented comprehensive contingency plans to guarantee a fail-safe operation.
- Innovatively designed the robot's gripper mechanism, incorporating four distinct opening strategies to ensure versatility and reliability in trophy handling.

EXTRA-CURRICULAR ACTIVITIES

South China University of Technology Outstanding Talents Robomaster2020 Summer Campus **Aug 2020**

South China University of Technology Outstanding Talents Robomaster2021 Winter Campus **Jan 2021**

Teaching Assistant

- Provided guidance and assistance to high school students in tasks related to 3D drawing and code writing.

AWARDS

ROBOMASTER2021 National College Robot Competition, First Prize **Aug 2021**

2021 Huawei Embedded Software Competition - Light Chaser(Southern Division), Secnod Prize **Jul 2021**

ROBOMASTER2020 National College Robot Competition, First Prize **Aug 2020**

Guangdong Collegiate Programming Contest, Third Prize **May 2019**

SKILLS

- **Language Skills:** English (IELTS Band 6.5 , CET-6), Chinese(Native)
- **Coding Skills:** C++ (Proficient) | C (Proficient) | Python (Skilled) | Matlab (Experienced) | Java (Experienced)
- **Robotics Skills:** STM32 (Skilled) | ROS 2 (Skilled) | Freertos (Skilled)
- **AI Skills:** PyTorch (Experienced) | OpenCV (Experienced) | YOLO (Experienced)