



INDUSTRIAL TRAINING PRESENTATION

AUTONOMOUS UNDERWATER VEHICLE DEVELOPMENT FOR SAUVC

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Project Overview

PROJECT

Development of an Autonomous Underwater Vehicle (AUV)

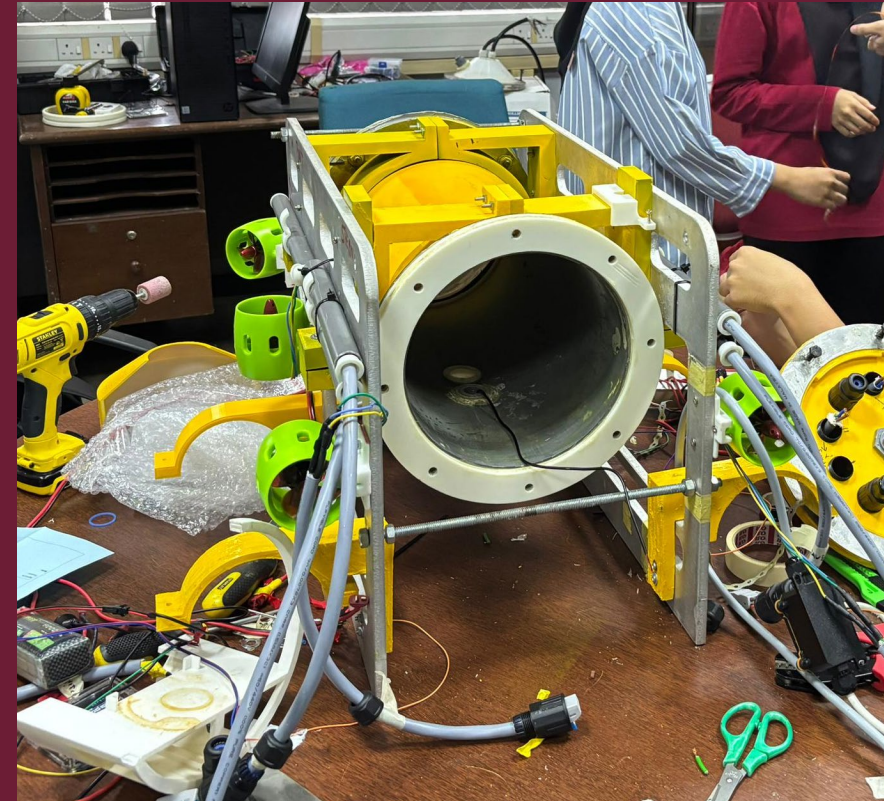
OBJECTIVES

- Develop and implement code for Raspberry Pi and Arduino
- Enable autonomous underwater navigation and task execution
- Participate in the Singapore Autonomous Underwater Vehicle Challenge (SAUVC)

Autonomous Underwater Vehicle (AUV)



01 Front view of the AUV



02 Back view of the AUV

Qualification Video



Project Goals

MAIN TASKS

- Autonomous navigation through gates
- Target acquisition and reacquisition
- Communication and localization of flares

TECHNOLOGY STACK

- Raspberry Pi 5 (Python)
- Arduino UNO (C++)

Roles and Responsibilities



ROLES

- Programming AUV control systems
- Interfacing sensors and integrating hardware
- Testing and debugging the control algorithms



KEY ACTIVITIES

- Research, implementation, and iterative testing
- Integration of camera systems for object detection

Challenges Faced

TECHNICAL CHALLENGES :



- Configuring Raspberry Pi and Arduino
- GPIO pin management and power supply issues



- Integrating camera systems and debugging PID algorithms

LEARNING CURVES :



- Adapting to new hardware/software



- Resolving hardware compatibility issues

Achievements

01 MILESTONES

- Successfully integrated control systems for AUV thrusters
- Implemented YOLO for object detection
- Qualified for SAUVC competition's initial round

02 SKILLS GAINED

- Embedded systems programming
- Sensor integration and real-time communication
- Debugging and iterative development

Learned During Internship

TECHNICAL SKILLS

- Python and C++ programming
- Raspberry Pi and Arduino system integration
- Image processing with OpenCV and YOLO

PROFESSIONAL GROWTH

- Resilience in problem-solving
- Importance of collaboration and mentorship

Conclusion

Valuable experience in robotics and AI
Developed a solid foundation for future projects
Thanks to supervisors, teammates, and UTM for the support

THANK YOU



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