

ZHIIHAO MA

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EDUCATION

University of York

Master of Engineering(MEng) in Electronic Engineering
School of Physics, Engineering and Technology

Sep 2021- Jun 2025

CORE MODULES

- Analogue Electronics
- Algorithms and Numerical Methods
- Engineering Mathematics, Signals and Systems
- Digital Design with HDL
- Communications and Control
- Robotics Design and Construction
- Digital Signal Processing
- Digital Engineering
- Systems Programming for ARM
- Advanced control
- Machine Learning and Computational Intelligence

TECHNICAL SKILLS

Languages:	Python, C/C++, Java, VHDL, MATLAB
Software:	Matlab, AutoCAD, Microsoft Office Suite, Autodesk Inventor, Simulink, LaTeX, Git, Arduino IDE, Mbed Studio
Operating Systems:	Windows, Ubuntu
Hardware:	STM32, Arduino, Ultrasonic Sensor, IR Sensors, IMU, Servo Motors
Competencies:	Embedded Programming, Control Systems Design, Data Analysis, Algorithm Development, Integrate Circuit Design

RESEARCH EXPERIENCE

Internship

Jun 2024 – now

Leg Control for Quadruped Robot

- **Background:** TQbot is four-legged walking robot with a tensional-integrity "tensegrity" spine body. The quadruped will be able to adapt to different terrains and gaits by using machine learning and Central Pattern Generators (CPGs) for control.
- **Aims:** This project focuses on implementing and tuning Central Pattern Generators (a kind of oscillator created with neural networks) to produce walking, running, and other gaits by setting CPG model parameters. Using different parameters can generate a variety of movements for quadruped robots, such as turning, transverse walking, standing, and jumping up, as well as some single-leg movements. The aims of adjusting these parameters are to combine the movement of the spine to generate interesting movements and to create an action pool of parameter combinations.
- **Skills:**
 - Python programming
 - Machine Learning
 - gait Analysis
 - Data Analysis
 - Parameter Tuning
 - Algorithm Development
 - Collaborative Development
 - Utilized Linux-based systems for development

Implementation and Evaluation of Central Pattern Generator Locomotion for Robofish Prototype

- **Objective:** Enhanced the Robofish prototype, an Autonomous Underwater Vehicle (AUV), for efficient underwater tasks.
- **Achievement:** Implemented the Central Pattern Generator (CPG) to improve locomotion, mimicking eel-like movements.
- **Skills:**
 - Embedded Programming
 - Motor Control
 - STM32 Microcontroller Programming
 - Central Pattern Generators (CPGs) Integration
 - Control Systems Design
 - Performance Analysis
 - Data Analysis
 - Parameter Tuning
 - Algorithm Development
 - Technical Documentation

REFERENCE

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