Zuo Jia

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Education

Nanyang Technological University (NTU) **Aug 2023 – Present**
Master of Science: Computer Control and Automation
School of Electrical and Electronic Engineering Singapore

GPA: 5.0/5.0

Harbin Institute of Technology (HIT) **Sep 2019 – Jun 2023**
Major: Measurement and Control Technology and Instruments
Bachelor of Engineering Weihai, China

GPA: 84.22/100 IELTS: 6.5

Project Experience

Deep Diffusion Models for Vital Sign Estimation **Sep 2023 – Present**
Supervised by Dr.Jianfei Yang and Prof.Lihua Xie

- Transformer Based Encoder of mmRadar Raw Data.
- Diffusion to Reduce Noise to Get Pure Human Vital Signal.

Electronic Control Software Architecture Project based on RT-Thread **Sep 2020 – May 2022**

- Responsible for the code design and writing of the robot's electronically controlled PTZ, including two-axis PTZ control based on cascade PID, temperature control algorithm based on Special PID Gyroscope , and algorithms for remote control of robot bombing, movement, visual-based automatic aiming and attack, etc..
- Identified and fixed errors in peripheral driver codes such as CAN and PWM in RT-Thread.

Motor Intelligent Control Board Software Development Project **Jul 2021 – Feb 2022**

- Achieved the automatic initial position calibration of the motor, angle, and speed closed-loops, auto processing mechanism of the master and slave machines, and motor stall and disconnection alarm.

2022 XbotPark Smart Product Innovation Boot Camp **Jul 2022 – Apr 2022**

- Completed systematic training and practices in the areas of design thinking, user research, smart hardware product design, and product management, and earned the title of junior product manager.

HIT Mathematical Competition Team **Sep 2020 – Nov 2021**

- Led a team to participate in four national-level mathematical contests, used Python, Mathematica, and SPSS for modelling, random map generation, the shortest path algorithm, visual processing, variance analysis, etc..

Anti-jamming Adaptive Exposure Algorithm Project **Jan 2021 – Apr 2021**

- Competed in the RoboMaster 2021 Robotic Competition, developed algorithms to automatically identify and remove large light spots and use PI controller to achieve automatic exposure for large target detection.

Self-Balanced Two-wheeled Smart Car Project in the National Intelligent Car Race **Nov 2019 – Sep 2020**

- Implemented the balancing and motion algorithms based on PID cascade controller to control the uprightness and movement of the smart car, and an attitude algorithm based on Kalman filer using six axis attitude sensors.
- Accomplished an electromagnetic tracking algorithm based on PID controller and a tracking algorithm adapted to complex road conditions (such as roundabouts, sharp turns, ramps, etc.).

Smartwatch Project in the National Undergraduate Electronics Design Contest **Nov 2019 – Sep 2020**

- Implemented a menu algorithm and used OLED and buttons to achieve simple man-machine interaction.
- Successfully achieved the following functions: body temperature monitoring, recording of steps, lighting the watch screen when lifting the wrist, and detecting the sleep posture based on an anti-bright screen algorithm.

Professional Skills

Programming language: Python, C, C++
Model (Based on PyTorch): Transformer, Diffusion
Platform: STM32, MSP430, STC, LPC, Linux
Software: Skilled with Keil, IAR, LabView, SPSS; familiar with MATLAB, Webots, Solidworks
Embedded Real-Time Systems (RTOS): RT-Thread

Leadership Experience

HERO Competitive Robot Team – Team Leader Jan 2021 – Sep 2022
HIT 718 Smart Car Laboratory - Team Leader Sep 2019 – Sep 2021

Honors

National-Level Awards

- 1^{st} **Prize** in the Final Round of the National College Students' ROBOMASTER 2022 Infantry Robotic Competition 08/2022
- 2^{nd} **Prize** in the Final Round of the National College Students' ROBOMASTER 2022 Robotic Competition 08/2022
- 2^{nd} **Prize** in the Final Round of the National College Students' ROBOMASTER 2021 Robotic Competition 08/2021
- 2^{nd} **Prize** in 2021 Higher Education Cup National Undergraduate Mathematical Contest in Modeling 11/2021

Regional-Level Awards

- 1^{st} **Prize** in the Eastern Division of the National College Students' ROBOMASTER 2022 Robotic Competition 08/2022
- 1^{st} **Prize** in the Northern Division of the National College Students' ROBOMASTER 2021 Robotic Competition 08/2021

Provincial-Level Awards

- 1^{st} **Prize** in the 11th Shandong University Student Science and Technology Festival - Science and Technology Museum Exhibit Creativity and Production Design Competition 11/2019
- 2^{nd} **Prize** in the National College Students Mathematical Contest in Modeling, Shandong Division 10/2020
- 2^{nd} **Prize** in the Shandong Division of National Undergraduate Electronic Design Competition 10/2020

Other Honors and Scholarships

- **Zeshi Scholarship (Top 10 in HIT)** 04/2023
- **Junior Product Manager**, rewared by 2022 XbotPark Smart Product Innovation Robot Camp 08/2022
- **Second-class Scholarship**, sponored by Harbin Institute of Technology (Weihai), 2020-2021 Spring Semester 05/2021
- **Outstanding individual in science and technology**, issued by School of Information Science and Engineering, Harbin Institute of Technology (Weihai) 12/2020
- **Outstanding Student Leader**, rewared by Harbin Institute of Technology (Weihai) 12/2020
- **Science and Technology Innovation Scholarship**, sponored by Harbin Institute of Technology (Weihai), 2019-2020 Fall Semester 10/2020

Related Courses

NTU

- Computer Control and Automation (5.0/5.0)
- Linear System (5.0/5.0)
- Machion Vision (5.0/5.0)
- System Analysis (5.0/5.0)

HIT

- Analogue Electronic Technology Experiment (94)
- Advanced Project-driven Electronic Technology Experiment (93)
- College Computer (91)
- C Language Programming (96)
- Error Theory and Data Processing (95)
- MCU Application Expansion Experiment (95)
- Single-chip Microcomputer Principle and Interface Technology (95)
- Virtual Instrument Software Design (95)
- Electronic Technology Practice (96)
- Automation Measurement Technology (92)
- Fiber-Optic Communications Technology (92)