Yiran Gu

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Seeking internship in embedded systems, automation & robotics, or software development starting Jan. 2024 or for summer.

EDUCATION

University of Michigan **Ann Arbor, MI**
Bachelor of Science in Engineering in Computer Engineering *May 2024*
GPA: 3.93/4.00
Coursework: Advanced Embedded Systems, Operating Systems, Data Structure and Algorithms, Computer Organization, SLAM and Navigation, Embedded Control Systems, Computer Vision, Autonomous Robotics

Shanghai Jiao Tong University **Shanghai, China**
Bachelor of Science in Engineering in Electrical and Computer Engineering *Sept. 2020 - Aug. 2024*
GPA: 3.43/4.00
Coursework: Linear Algebra, Probabilistic Methods, Intro to Logic Design, Signals and Systems, Electronic Circuits

WORK EXPERIENCE

Solvay (China) Co., Ltd **Shanghai, China**
Automation and Robotics Intern *Apr. 2023 - Aug. 2023*
- Designed PCB for Balance Box to help researchers record data during chemical experiments in vacuum glove boxes
- Designed and assembled frame with Keyence's profilometer and linear actuator to enable 3D laser scan for panels
- Processed image of metal panels with filters and supervised machine learning models to detect and classify blisters
- Compared accuracy of laser scan result of linear actuators with stepper motor and Aubo robotic arm

PROJECT EXPERIENCE

University of Michigan **Ann Arbor, MI**
Automated Pet feeder and monitor *Jan. 2023 - Mar. 2023*
- Designed an automated pet feeder and monitor on STM32 Nucleo board in C and ARM assembly
- Implemented decision-making strategy on database of various breeds of pets and certain pets' behavior in Python
- Interfaced with peripherals including Bluetooth modules, servos, pressure sensors using communication protocols such as UART, I2C, SPI, CAN, as well as methods like MMIO, PWM, and ADC/DAC

Adaptive Cruise Control *Mar. 2023 - Apr. 2023*
- Developed a Simulink model to implement an Adaptive Cruise Control (ACC) system for a simple vehicle
- Utilized a longitudinal model to determine the velocity of the vehicle based on driving and friction forces
- Implemented a position and speed controller to maintain a safe gap between the vehicle and the car in front of it

Object detection and tracking *Feb. 2023 - Apr. 2023*
- Utilized Yolo-v7 within Darknet to detect and classify moving objects.
- Developed a multi-object tracker using OpenCV to monitor cars and pedestrians on the street
- Employed the Kalman filter for predictive path analysis based on historical tracking data

Mbot Escape Challenge *Oct. 2022 - Dec. 2022*
- Tuned PID parameters to allow the MBot go straight and turn certain angles accurately with open loop control
- Implemented action model based on occupancy grid mapping and found optimal hit/miss odd values
- Implemented Bayes particle filter and A-star algorithm to find optimal path solutions

Shanghai Jiao Tong University **Shanghai, China**
Remote Control Mars Rover with Variable Chassis *May 2021 - July 2021*
- Designed a Mars Rover prototype, incorporating force simulations via Solidworks, and assembled a variable chassis using 3D printed components for optimal terrain navigation.
- Programmed an Arduino Mega to control a 6-DoF robotics arm and sensors to avoid obstacles an collect samples

LEADERSHIP EXPERIENCE

UM-JI Student Science and Technology Innovation Association **Shanghai, China**
Director of Project Department *May. 2021 - Aug. 2022*
- Organized 6 research seminars for 200 students to foster understanding and improve student-professor comm
- Managed intramural Mechanical Design Competition, handling rule-making, site selection, and pre-event workshops

TECHNICAL SKILLS

Languages: C/C++, MATLAB, LaTex, Verilog, ARMv7, Wolfram, Python
Developer Tools: VS Code, Clion, Simulink, STM32CubeIDE, VMWare, Vivado, Google Colab, Linux, GitHub
Technologies/Softwares: Solidworks, FlashPrint, Mathematica, Origin, Pspice, Proteus, Multism, VNC Viewer

ACTIVITIES

SJTU Student Union, *member* *Oct. 2021 - May 2022*
Volunteer teaching in Yunnan, China, *Volunteer teacher* *Dec. 2021 - Jan. 2022*
SJTU RoboMaster 2021 intramural competition, *team member, championship* *Sept. 2021 - Nov. 2021*