James Young

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Education

The Hong Kong University of Science and Technology — Hong Kong
BEng in Electronic Engineering — *Sept. 2020 – Present*

Relevant Coursework

- Intro. to Computer Science
- Programming with C++
- Object-Oriented Programming and Data Structures
- Intro. to Computer Organization and Design
- Computer Communication Networks
- Electro-Robot Design
- Introduction to Embedded Systems

Skills

Programming Languages: C, C++, Javascript, Python, SQL (Postgres)
Hardware: STM32, ESP, Raspberry Pi, Arduino
Protocols: UART, I2C, SPI
Tools/Platforms: Git, Docker, Linux

Work Experience

IoT Intern | Graphite Venture Limited — December 2022 – May 2023
C++, ESP32, Arduino — *(Full and Part Time)*

- Developed Arduino libraries for reading water sensor data with ESP32 and sending sensor data to AWS IoT Core through MQTT with a SIM7600G module.
- Used RS485 for reading sensor data with ESP32 and USART for sending data to sim module.
- Created an Arduino library for communicating to multiple ESP32 with ESP-Now protocol.

Projects

Mini Robot Cleaner | *STM32, C, Python*

- Created a robot car with a STM32 board that can be wirelessly controlled through UDP transmissions and also has an autonomous free roam mode
- Integrated the bubble rebound algorithm for obstacle avoidance in free roam mode using 3 ultrasonic sensors
- Used Python for socket programming to send and receive UDP transmissions and PyQT5 to create GUI to control robot wirelessly

IoT Air Quality Monitor | *STM32, ESP32, C*

- Created an IoT monitoring station where users can view the temperature, humidity, CO2, and TVOC sensor readings on a web browser.
- Measures sensor data via I2C with STM32, then sends sensor data to ESP32 through UART.
- Used ESP32 to create web server and sends sensor data as HTTP response to client requests.

Tic-Tac-Toe w/ Minimax AI | *C++*

- Created a terminal tic-tac-toe game with option to either play against AI or another person.
- AI uses minimax algorithm to determine the best move each turn. Used tree data-structure for storing different board states in each turn.

Extracurricular Activities

- HKUST Football Team — Jan. 2021 - Present