Jiahong(Frank) Ji

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SKILLS

Coding: C (FreeRTOS, Embedded System), C++, Python (Pytorch, Sklearn, Numpy, Pandas), Java, Kotlin, SQL, MATLAB, Git

Software: Altium Designer, Cadence Virtuoso, Kicad, LT-spice, P-spice, Logic Works, NX 11(CAD), Maple, MATLAB, Adobe After Effect, Cinema 4D.

EDUCATION

University of Pennsylvania (UPenn), Philadelphia, PA 09/2020-12/2021

Major: Electrical Engineering, M.S. GPA: 3.96 / 4.0

Coursework: IoT and Edge Computing; Real-time Embedded System; Applied Machine Learning; Operating Systems Design and Implementation; Statistic for Data Science; Project Management; Introduction to Network and Protocol; Linear System Theory; Feedback Control

Rensselaer Polytechnic Institute (RPI), Troy, NY 09/2017-05/2020

Major: Computer and System Engineering, B.S. GPA: 3.56 / 4.0 Dean's Honor List: 2017-2018

Coursework: Embedded Control; Engineering Graphics & CAD; Data Structures; Signals and Systems; Electronic Instrumentation; Computer Architecture, CS 101, Networks, and Operating System; Microprocessor System; VLSI Design; Computer Vision for visual effects.

WORK EXPERIENCE

White Fox Scooters, Inc, New Jersey, US *www.whitefoxscooters.com* 05/2021-08/2021
Electrical Engineer (Embedded Linux, Raspberry Pi, Arduino, RFID, IoT)

- Developed the Electrical System for new generation of E-scooter's docking station with IoT functionality
- Wi-Fi capability of the RaspPi was used for the docking station to remotely lock and unlock after communicating with the Arduino on the scooter.
- A battery overcharge prevention circuit was developed to extend battery life and increase safety of the user.
- Designed the electrical system of the helmet rental station with RFID/electrical lock/motion sensor/weight sensor
- Self-learned Kicad to layout the PCB board and standardized footprints and connections for future mass production

Orange Magic Cube Co. Ltd, Shenzhen, China *www.omcube.com* 06/2019-07/2019
Software Engineer (Kotlin, MySQL, Vue.js, MyBatis, Git, Spring, Spring MVC)

- $1200/year cost savings by optimizing HR system workflow, modifying Vue.js web code for staff data
- Self-learned Kotlin in order to reconcile salary report generation algorithm with actual book values
- Created representative data to run end-to-end tests on existing code; submitted proposals for feature improvements and filed bug reports

Bosch Automotive Products Co. Ltd., Suzhou, China, *https://www.boschautoparts.com/en/* 01/2019-05/2019
EMC Measurement Assistant

- Tested electromagnetic compatibility of automotive products(ISO-11452 / CISPR-12), optimizing testing parameters and creating technical documentation
- Designed a test plan which a digital fiber sensor (FS-N11) is used to measure rotational speeds of wiper motors
- Set up EMC testing environment and wrote testing reports for customer evaluation
- Average Monthly EMC product testing throughput increased 20% in my duration of internship

PROJECTS & COURSEWORK

Where did Simon go? – an IoT game *(DevPost | Youtube Demo | UI | PCBA | Code)* 01/2018-04/2018
Keyword: FreeRTOS, Altium Designer 21, MQTT, Node-RED, Atmel MCU, ARM M0 Cortex, I2C, ADC/DAC

- Designed and laid out a custom IoT PCB game board which contains multiple I2C ports, audio output port, and an on-board thumb stick
- Integrated IoT functionality by utilizing the WIFI module on ATSAMW25 MCU
- Leveraged FreeRTOS to perform essential game tasks, on-the-cloud firmware update, customize bootloader
- Developed the web user interface using Node-RED, and performed data exchange by using HIVEMQ as the MQTT broker

PennOS (Demo Post) 03/2021-05/2021
Keyword: Linux, Virtual OS, Scheduler, FAT file system, multi-thread, Ucontext

- Developed an UNIX-like virtual operating system with a custom file system that leveraging the FAT file system library
- Integrated a shell that supported priority job scheduling, redirection, synchronous signaling, job control and terminal control
- Implemented a bash-like interface for the user to run the build-in commands.

Birds Species Identifier (Demo Post / Github Link) 11/2020~12/2020
Keyword: Machine Learning, Pytorch, Sklearn, Zero-shot Learning, Convolutional Neural Network, Decision Trees

- Trained Convolutional Neural Network model on the birds' images, to predict the birds' attributes
- Deployed a decision tree to categorize birds' species based on their attributes
- 31.2% Test Accuracy over 200 species after training on 3,000 images

Double Security System with Password and RFID Verification (Demo Post / Github Link) 10/2019-12/2019
Keyword: STM32, ARM M7 Cortex, RFID, SPI, UART, DMA, Interrupt

- Designed and software a 2-Factor Authentication smart lock to require a correct combination of a key tag and password to unlock the door
- Digital inputs/outputs on the STM32 were used to capture keypad interactions while the RFID communicated via SPI port