PARTH KETANKUMAR MODI

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EDUCATION

The Ohio State University, Columbus
M.S. Electrical and Computer Engineering Jan 2021 – Dec 2022
Nirma University, Ahmedabad
B. Tech Electronics and Communication Engineering Jul 2016 – May 2020

SKILLS

Languages : Java, Embedded C/C++, Python, Assembly Language, Verilog
Hardware : Altium, Oscilloscope, Schematic Design, PCB Design, Soldering, Multimeter, JTAG Debuggers
Communication Protocols: MQTT, Bluetooth, WiFi, SPI, I2C, CAN, UART
Development Tools : Git, JIRA, Confluence, Azure DevOps, Bitbucket, Android Studio, VS Code

WORK EXPERIENCE

Masonite International Corporation - West Chicago, Illinois
Embedded Software and Electrical Engineer Feb 2023 – Present

- Developed production-ready multithreaded C++ firmware using FreeRTOS for a Microchip ARM Cortex M4 based smart-home device, adhering to product requirements and optimizing power management
- Followed agile development using Azure DevOps for sprint planning, code reviews, and bug tracking, and utilized Git for version control
- Utilized the actor thread framework for enhanced message passing within multiple threads and employed SPI, I2C, UART, and CAN protocols for communication with sensors and actuators
- Engineered reusable code components, including a peripheral fault management policy, thread monitoring actor, and software digital I/O debouncer, utilizing state machine design principle, polling, interrupts and callbacks
- Conducted firmware unit and integration testing using JTAG debuggers and implemented bug fixes to ensure quality, reliability, and adherence to requirements
- Emulated perf board circuits including power management circuits for concept visualization of upcoming projects depending on stakeholder requirements
- Developed a test fixture schematic for QA test automation, created the PCBA layout, and collaborated with vendors to ensure production readiness, reducing approval time per the NPD stage gate process
- Conducted EMI/EMC testing in an anechoic chamber to ensure compliance with FCC standards
- Developed a Field Failure intake process by creating a new issue type on Jira, streamlining debug information collection to reduce engineering debug time
- Conducted hardware debugging on defective field units using oscilloscopes, multimeters, current meters, and logic analyzers maintaining detailed records of identified issues
- Collaborated with internal hardware, system engineering, and cloud teams, as well as external suppliers, contractors, and businesses, to ensure seamless project integration and successful delivery

Electrical Engineering Intern May 2022 – Aug 2022

- Designed an electromechanical system for the registration/deregistration test automation for a smart-home device, reducing testing time and over the air update launch time.
- Deployed Arduino based Embedded C++ firmware on a perf board prototyping circuit for the system
- Led a team of four interns, managed stakeholder communications, and documented design requirements, wiring diagrams, test protocols, and DFMEA analysis for the system

The Ohio State University – Columbus, Ohio
Research Assistant - Link May 2021 – Dec 2022

- Developed a Battery-Powered Real-Time Tracking device able to track cargo being delivered by air
- Procured components and devised a mixed signal schematic and PCB layout for the system using KiCAD
- Designed a wireless charger with TI BQ51050B and a 15W fast wired charger with TI BQ25303J

PROJECTS

G-Bot – *Link* Mar 2022 - Apr 2022

- Developed an ESP32 based robot that could be operated using android device gestures
- Built an app on Android Studio to collect gyroscope-based user gestures and send data to ESP32 via WebSockets

RasCar - *Link* Aug 2019 - Nov 2019

- Designed a 1:100 scale Raspberry Pi car model with object detection, automatic wipers, and headlights