

VIKRANTH VAKATI

Embedded Software Engineer

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EDUCATION

Wentworth Institute of Technology | GPA: 3.6/4.0 | April 2024

- Master of Science in Computer Engineering, Concentration in Internet of Things
- Bachelor of Science in Computer Engineering, Minors in Electrical Engineering and Internet of Things

SKILLS

Technical Skills: Embedded development, Web development, Communication protocols, Hardware testing

Languages and Tools: C/C++, Python, Assembly, Verilog, SQL, MATLAB, JavaScript, Node.js, React.js, Ladder Logic

Software: Git, LabView, MultiSim, Simulink, Click PLC, Quartus, Figma, Wireshark, SolidWorks, Windows, Linux

Equipment: Microcontrollers, FPGA, Multimeter, Oscilloscope, Function Generator, Power Supply, Logic Analyzer

PROJECTS

Real Time Energy Monitoring System | March 2024

Energy data aggregation system to optimize university campus power generation using Python and JavaScript

- Designed prototype modules to reliably monitor power supply, generation, and consumption data
- Aggregated diverse data from legacy and modern systems for historical and real time power metrics
- Crafted a web interface to streamline the analysis of aggregated energy data, facilitating informed decision making and enhancing accessibility of power metrics

Security Camera | February 2024

Low cost real time security camera using the ESP32-CAM microcontroller

- Established seamless network connectivity for remote access to live camera feeds via Wi-Fi network
- Implemented motion detection algorithms to trigger alerts and notifications for enhanced security
- Developed a user friendly web interface to view and control the camera feed

Automated Hopper Dispensing System | August 2023

Ladder logic program for an automated hopper to fill boxes on a conveyor belt

- Utilized CLICK programming software and a 4 channel PLC to implement the controller
- Incorporated run, standby, and box full lights based on a conveyor motor, photo sensor, and level switch
- Validated the system to guarantee accurate operation and responsiveness to various inputs

Antenna Controller Design | August 2023

Digital lead controller for an antenna control system in Simulink

- Employed root locus analysis in MATLAB for system analysis, controller design, and optimization
- Conducted thorough analyses to identify critical system parameters and fine tune the controller
- Reduced the settling time of the uncompensated system within 0.8% of the design requirements

Optical Heart Rate Detection | April 2023

Non-invasive heart rate detection algorithm in MATLAB

- Implemented color signal extraction by selecting optimal color channels and regions of interest
- Applied signal processing for frequency domain analysis to capture changes related to the cardiac cycle
- Achieved 95% accuracy by conducting extensive testing to optimize the algorithm

EXPERIENCE

Electrical Systems Test Engineer | Delta Magnetics and Controls | January 2021 - January 2023

Custom control panel design and fabrication for process automation

- Conducted visual, point to point and operational testing on control panel systems to ensure functionality
- Designed and built test panels for functional testing
- Utilized wiring diagrams and schematics following industry standards

PUBLICATIONS

Automated Soil Testing Device for Agriculture | [EAI BICT 2023 pp 31-39](#)

Offline mesh network to monitor conditions on remote farms with ESP32 nodes and environmental sensors

- Programmed each node to take sensor input periodically and send the collected data to a server node
- Developed a custom web interface to provides farmers with valuable insights and decision making tools
- Optimized the system for reliability and performance with a 4% packet error rate, resulting in a system that is dependable in rural areas with limited internet connectivity