VIKRANTH VAKATI

Embedded Software Engineer - U.S. Citizen

SKILLS

Technical Skills: Image processing, Frontend development, Networking, 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, Linux, Windows
Equipment: Microcontrollers, FPGA, Multimeter, Oscilloscope, Function Generator, Power Supply, Logic Analyzer
Protocols: SPI, I2C, BLE, LoRa, Wi-Fi, UART, RS232, RS485, Modbus, RFID

EXPERIENCE

Embedded Systems Engineer | Bodkin Design & Engineering May 2025 - Present
Electro optical imaging solutions design for industrial and research communities

- Designed software for image acquisition, visualization, and control using C++, Python, and MATLAB
- Integrated optical components with electronics using wired and wireless communication protocols
- Investigated areas of new research and development to be implemented in designs

Electrical Systems Test Engineer | Delta Magnetics & Controls Jan 2021 - Jan 2023
Custom control panel design and fabrication for process automation

- Designed and fabricated control panels following IEC standard schematics
- Conducted visual, point-to-point, and operational testing on systems to ensure functionality
- Deployed over 1000 control panel systems, adhering to quality and functionality requirements

PROJECTS

Energy Monitoring System | Python, JavaScript Mar 2024
Data aggregation system to optimize university campus power generation using Python and JavaScript

- Developed prototype modules to monitor real-time power supply, generation, and consumption
- Analyzed over 400 data points daily from legacy and modern systems to identify trends
- Crafted a web interface to streamline the analysis of energy data and enhance accessibility

Security Camera | C Feb 2024
Low-cost real-time security camera using a C script on the ESP32-CAM microcontroller

- Established remote access to camera feeds on up to 5 devices via a Wi-Fi network
- Implemented a motion detection algorithm to improve security with real-time alerts
- Reduced false positive alerts by 50% by using a ratio of moving pixels to filter out noise

Optical Heart Rate Detection | MATLAB Apr 2023
Non-invasive heart rate detection algorithm using digital signal processing techniques in MATLAB

- Strategically selected optimal channels and regions of interest to extract color signals
- Utilized frequency domain analysis to capture changes related to the cardiac cycle
- Refined the algorithm to achieve 90% accuracy in detecting heart rate

PUBLICATIONS

Automatic Soil Testing Network for Agriculture | EAI BICT 2023 pp 31-39 | bit.ly/3TsB0U8 Sep 2023
Offline mesh network to monitor conditions on remote farms with ESP32 nodes and environmental sensors

- Integrated environmental sensors to periodically transmit data to a centralized server node
- Developed a custom web interface to provide insights through an embedded GUI
- Successfully transmitted 96% of data in rural areas with minimal power and communication networks

EDUCATION

Wentworth Institute of Technology

- Master of Science in Computer Engineering, Concentration in Internet of Things May 2024
- Bachelor of Science in Computer Engineering, Minors in Electrical Engineering and IoT Dec 2022