Christopher J. Kosik

Developer and Engineer

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EXPERIENCE

Center for Advanced Smart Sensors and Structures, Kalamazoo, MI - Undergraduate research
May 2018 - Present

- Utilized Zigbee protocol to transmit realtime capactive sensor values to web and desktop application.
- Designed, ordered, and built PCB implementing Photoplethysmography algorithm for blood flow detection and vascular assement of patients.
- Implemented multiple mobile applications utilizing standard Bluetooth and BLE for motor control, electrochemical sensing, and temperature logging.
- Leveraged knowledge in Xtensa processor architecture, Logic analyzer debugging of I2C bus traces, and debugged BLE communication with wireshark and in house developed tools.
- Increased real time response of multinode PPG sensing by 40% through redesign of firmware to leverage multi-core microprocessor

EDUCATION

Western Michigan University, Kalamazoo, MI —
Major: Electrical Engineering, B.S.E, Sept 2016-May 2020
Minor: Computer Science and Math

Programming Coursework —
Algorithm Design, Data and File Structures, System Programming, Microcontroller Applications

EE Coursework —
Digital Design, Analog Electronics, MEMS, Control Systems, Electrical Machinery, Microprocessors

SKILLS

- Java – JFXML/C# - Visual Studio
- HTML/CSS/Javascript - Typescript
- IOS, Android, React-Native CLI (with native calls)
- C/ C++
- Microcontrollers (STM32xx, ESP32, ATMEGA328, MSP430)
- Linux and Git daily use
- FreeCAD, Fusion 360 - CAD
- PCB Design: Eagle, EasyEDA, KiCAD
- FPGA Development: Spartan 6 XILINX (VHDL)

FRAMEWORKS & UTILS

- ReactJs/ React-Native
- Reactotron
- CI: Jenkins
- DevOps: Cpanel & Hosting
- Valgrind & Gdb
- Nodejs
- Bootstrap/Jquery
- Sketchup/Figma (UX/UI)

Projects

Zigbee Based Helmet Impact detection system: Developed web application to stream sensor values to some graphs and database. Project later moved onto a closed source Electron desktop app.

Yet Another Lithophane holder: Re-designed a lithophane (3D printed image that allows light through) portrait holder in CAD and built a ESP32 controlled backlight of WS2812B RGB LED's for cool effects. Implemented on protoboard and mobile app created with react-native.

Strain sensor gauge tester: Developed Android Bluetooth application to control stepper motor that would compress and decompress flexible fabricated strain sensor for automated testing.

Conveyer belt control: stm32F4 based motor driver application. Program detects objects at key points to process and perform industry functions.