NEIL WALSH

Computer Engineer

3918 Inglewood Ave S
St. Louis Park, MN 55416

(952) 847-0603

Ntwalsh35@gmail.com

EDUCATION

University of Wisconsin-Madison
BS, Computer Engineering
May 2023
GPA: 3.46

KEY SKILLS

Languages:
Java
C/C++
Python
Bash
MATLAB
Verilog
XML
JSON

Tools, Concepts, Job Skills:
FreeRTOS
Git
APIs
REST
Eclipse
Electrical Bench Equipment
Visual Studio Code
Data Structures
Operating Systems
Object-Oriented Programming
SPI/UART/I2C protocols
Circuit Prototyping
Micro Soldering
Mac/Windows/Linux
Technical Communication

EXPERIENCE

Intern – May-Aug 2022 – Matrix Product Development
- Designed and ran tests on low-power embedded circuits to predict battery life over years of use
-Worked on embedded firmware in C, C++ and Python using JSON, BLE standards and REST API
- Wrote firmware for low-power wireless communications modules
- Communicated effectively with hardware engineers for product specification questions regarding the ICs we used
- Edited and proofread schematics for embedded circuits
- Contributed to the design of multiple low-power Internet-of-Things products
- Worked with onSemi RSL10, Innophase Talaria TWO, and InPlay IN100 ICs and SoCs, writing firmware to read sensors and transmit data wirelessly
- Performed various administrative/logistical tasks related to shipping and product assembly automation
- Prototyped and assembled boards using a reflow oven and soldering iron, sometimes hand soldering components as small as 0402 or 0201.

Service Mechanic– Mar 2021-Aug 2023– Budget Bicycle Center
- Worked in a team to repair bicycles in a fast-paced environment, quickly learning in-depth technical information and new skills

PROJECTS

Digital FM Synthesizer – 2023
- Worked in a team to design the schematic, board layout and code for a digitally generated synthesizer controlled by capacitive touch
- Wrote low-latency C code to generate a signal corresponding to the frequency of each note pressed, with potentiometer inputs read through an ADC
- Used real-time digital signal processing theory to modify the timbre and pitch of each note as it played using ADC inputs
- Optimized the generation of multiple sine waves to minimize time complexity and produce a clean and predictable output signal
- Used Modus-Toolbox, an eclipse IDE and GitHub for writing code and multimeters, oscilloscopes, soldering tools and UART for debugging

Microprocessor Video Game Development – 2021
- Used FreeRTOS to develop a handheld video game on the TI MSP432 microprocessor with a partner using Code Composer studio, an Eclipse-based IDE
-Wrote C code to handle control inputs and game logic within the FreeRTOS framework
- Personally handled accelerometer and button input and LCD animation and coordinated partner work through GitHub

Guitar Effects Pedals – 2017-2023
- Designed and prototyped analog and digital effects circuits
- Studied and tweaked existing circuit designs
- Investigated a business plan to build pedals more efficiently
- Explored Digital Signal Processing techniques to create real-time digital audio effects on the DaisyDSP chip platform