

# CALLUM HUME

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## OBJECTIVE

An enthusiastic and skilled software engineer with a proven track record of developing software and hardware solutions for a diverse selection of industries. Seeking a challenging role that will make use of and continue to develop experience and creativity in software and electronics engineering.

## EXPERIENCE

### Electrical Engineer

Phase 1 Engineering – Holland, MI

December 2023 – Present (remote)

January 2022 – December 2023 (on-site)

- Develop software and firmware applications
- Rapid prototyping of software and hardware
- Project development from concept to production
- Time management – multiple projects at a time
- Project requirements / specifications
- Project labor estimates
- Project proposals
- Test plan creation and execution

## PROJECTS

Linear motor – Medical device manufacturer

- MATLAB / Simulink for motor control algorithm development,
- Simulink physical model development to parallel path development with physical prototypes, explore improvements,
- Embedded software on motor driver using FreeRTOS for task management (control algorithm, data collection, debug console)

Planting platform – Agricultural equipment supplier

- Android (Java) app development – UI/UX, activity/service lifecycles, Bluetooth interaction with planting equipment,
- Firmware (C) development – PI / PID control, analog sensor measurements, custom radio protocol on 802.15.4 radio modules (up to 61 devices in pseudo-mesh network), FreeRTOS for task management, event timing, CAN / J1939 / ISOBUS implementation, GPS parsing
- Hardware development – schematic capture, prototyping and test, PCB layout, assembly, EoL testing

## EDUCATION

### BS, Computer Engineering

Computer science minor

Western Michigan University

GPA: 3.76 | Dec 2021

### AAS, Engineering

Kalamazoo Valley Comm. College

GPA: 3.72 | Aug 2019

## KEY SKILLS

- JAVA (ANDROID)
- EMBEDDED C
- C++ / RAGEL
- MATLAB / SIMULINK
- CAN / J1939
- FREERTOS
- ALTIUM / KICAD
- GIT
- ELECTRONICS DIAGNOSTICS
- TH / SMD SOLDERING
- TH / SMD REWORK
- MECHANICAL ASSEMBLY
- LINUX SERVER ADMIN
- MICROSOFT OFFICE ADMIN
- PHYSICAL NETWORKING

## HONOR SOCIETIES

- TAU BETA PI
- PHI KAPPA PHI
- TAU SIGMA
- PHI THETA KAPPA

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#### Precision planting platform – Agricultural research

- High-precision motor control, position prediction for accurate hardware reaction.
- Sub-project of planting platform. Similar feature set, but no FreeRTOS, CAN / J1939 / ISOBUS.

#### Product development platform – Consumer electronics

- Hardware – schematic capture, PCB design, hardware test
- Firmware – C, analog sensor measurements, debug console

#### Utility monitor – Utility equipment supplier

- Firmware – C++ / Ragel – integration and test of new LTE modems, familiarity with AT command set

#### IV curve tracer – Academic project

- Firmware – C, MPS430 device, ADC and DAC interactions, Bluetooth serial comms link
- Software – C# windows forms, Bluetooth serial comms link
- Hardware – Altium design, TH / SMD assembly, rework

#### ST-LINK programming hat – Hobby project

- Hardware – KiCAD design, TH / SMD assembly

#### 7-segment counter desk ornament – Hobby project

- LTSpice simulation / circuit design
- Hardware – KiCAD design, TH / SMD assembly

#### BCD to 7-segment converter – Academic project

- LTSpice simulation / circuit design
- Hardware – KiCAD design, TH assembly

#### Linux server with various services – Hobby project

- Personal webhosting
- Personal media archive
- Various game servers

## REFERENCES

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[Available upon request.]