

# Christian Bender

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Embedded Software Engineer with a strong hardware background, skilled in efficient embedded design, debugging, and verification testing across hardware and software platforms. Experienced in developing embedded applications using C, C++, and Linux/Linux kernel. Eager to contribute to diverse projects, continually learn, and grow within dynamic teams.

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## Professional Experience

### Stealth Music & AI Startup, SAN FRANCISCO, CA

July 2024 – Present

*Co-Founder and Lead Developer*

- Full stack Android app planning and development utilizing multiple AI models

### VEO, COPENHAGEN, DK

August 2023 – December 2023

*Camera Development Engineering Intern*

- Developed new power management firmware for Zephyr-based cameras, refining charging algorithm and updating proprietary USB-C Linux drivers to optimize battery charging and improve overall efficiency
- Implemented an updated charging algorithm and BMS logging with C and Device Tree
- Prototyped 5 custom real time algorithms for camera wind noise reduction with GStreamer elements and Python

### VICOR, ANDOVER, MA

January 2023 – July 2023

*Electrical Design Engineering Intern*

- Conducted extensive verification testing and documentation on pre-release 16 – 50V input, 16-60V output DC – DC power converter line.
- Optimized features such as overvoltage turnoff, turn-on ramp-up and overshoot, and switching overshoot, and corrected localized board issues which prevented further optimization, such as excessive noise on signal lines
- Wrote design verification (DV) document cataloguing all performance findings and responses to failures

### NORDSENSE, COPENHAGEN, DK

January 2021 – August 2021

*Hardware Engineering Intern*

- Supplemented two-person hardware team by creating simulations emulating expected worst-case product current draw using Python and C++ to aid battery sourcing decisions
  - Installed and tested prototype devices in municipal trash cans in Denmark and San Francisco
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## Projects

### Plant Ware Wireless Plant Care Ecosystem

July 2023 – April 2024

- Led embedded software development for hub, sensors modules, and output modules in a mesh enabled indoor plant sensor and health ecosystem
- Designed and implemented automatic sensor recognition, Wi-Fi mesh management, and Bluetooth management for backend app integration, and EEPROM management for data persistence using C++, ESP-IDF, ESP Arduino, and Painless Mesh API

### Embedded Audio Sample Player with MIDI Support

March 2024 – April 2024

- Led audio driver development for an STM32H7 based bare-metal audio sample player which would take MIDI input
- Designed and implemented a high-performance DMA-based audio driver for seamless .WAV data transmission to the Audio CODEC using the HAL library, H7 DMA, and SAI FIFO all interacted with through C++

### Online Othello / Reversi Game

January 2023 – May 2023

- Developed an online Othello game enabling users to play against AI or each other, both locally and online
  - Co-led backend development for game logic, Node backend server, and socket development with MVC architecture using JavaScript for game logic and AI model, HTML for GUI, and SQL for the database
  - Used Visual Paradigm to create use case, class, activity, and sequence diagrams
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## Education

### NORTHEASTERN UNIVERSITY, BOSTON, MA

BS in Computer Engineering & Math Minor, Summa Cum Laude, IEEE-HKN & TBP Honors Societies

May 2024

**3.97 GPA**

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## Skills

**Programming Languages:** C, C++, Python, JavaScript (ES6), HTML, CSS, SQL, Verilog, System Verilog, Linux Kernel C

**Libraries and Frameworks:** STM HAL, Zephyr SDK, ESP-IDF SDK, HTTPS, Arduino, Node.js

**Tools and Platforms:** Git, Visual Paradigm, Embedded Linux