Nathaniel Felleke

Boston, MA | nfelleke@mit.edu | 619-635-7152 | Nathaniel Felleke | NathanielFelleke

Education

Massachusetts Institute of Technology (MIT) — *Cambridge, MA*
B.S. in Electrical Engineering and Computer Science, GPA: 4.8 / 5.0 — *Expected May 2026*

- Relevant Coursework: Digital Systems Lab, Microcomputer Project Lab, Computation Structures, Semiconductor Electronic Circuits, Signal Processing, Inference, Engineering for Impact
- Current Coursework: Digital Systems Lab II, Power Electronics Lab, Operating System Engineering, Biomedical Imaging with MRI
- Activities: VR/AR @ MIT, SAE Recruitment Chairman, DesignPlus Learning Community

Experience

Undergraduate Researcher — *Cambridge, MA*
Signal Kinetics Group, MIT Media Lab — *Sept 2025 – Present*

- Currently developing low-power firmware for peripheral conductivity and temperature sensors as part of coordinated underwater sensor network development

Embedded Systems Engineer — *Bay Area, CA*
Stealth Neurotech Startup — *June 2023 – Present*

- Independently architected and delivered medical device solution from concept to deployment, including schematic design, PCB layout, and embedded firmware development, reporting directly to CTO/CEO
- Led end-to-end product lifecycle for a low-power monitoring device now deployed in an active clinical trial, coordinated integration with cross-disciplinary team, and managed technical vendor interactions for quoting, component selection, and custom part fabrication
- Developed real-time embedded firmware using Nordic/Espressif processors with BLE connectivity, enabling low-latency biomedical data streaming with an extended battery life

Undergraduate Researcher — *Cambridge, MA*
Fluid Interfaces Group, MIT Media Lab — *Oct 2022 – May 2023*

- Worked on a wearable system that measures sleep stages using a real-time, low-power embedded system
- Developed an ML model for real-time sleep stage classification optimized for deployment on ARM Cortex-M processor with under 256 KB RAM using Tensorflow Lite
- Built data collection script and classification GUI using Python/Tkinter for model training

Projects

FPGA 3Display — 3D volumetric display using a rotating LED matrix — *Documentation*

- Co-designed a real-time volumetric display system: motor control, rotational IR tracking, slip-ring power delivery, and overall system architecture
- Built a custom HUB75 LED matrix controller in Verilog using Binary Code Modulation and developed the pipeline to transform rotational BRAM data into synchronized dual-column output
- Led end-to-end system integration: coordinated module integration, designed AXI stream interfaces between FPGA modules, and managed mechanical assembly including the custom mount and frame

How to Make (Almost) Anything — *Documentation*

- Built weekly prototypes including directional ultrasonic speaker, custom ergonomic chair, and piano learning display, demonstrating proficiency across PCB design, 3D printing, CNC machining, molding & casting, and embedded systems integration

Other Projects — *Documentation*

- Medical Alert System — Embedded ML system for fall detection with automatic SMS alerting capabilities
- Forest Fire Detection Plane — Satellite operated glider with computer vision system for aerial fire detection and alerting (Winner: Eyes on Edge tinyML Vision Challenge)
- Programmable Compass — GPS and magnetometer-based device that points to any specified location worldwide using an addressable LED ring light and PSoC 5 microcontroller

Skills

Languages: C, C++, Assembly, Verilog/SystemVerilog, Python
Embedded Platforms: Espressif, STM32, Nordic, PSoC, Linux/Raspberry Pi, Arduino
Tools: Altium, KiCad, Fusion 360, Vivado, CocoTB, Cadence Virtuoso, Git, Jupyter, TensorFlow Lite
Skills: Laboratory Equipment Experience, PCB Design & Assembly, Rapid Prototyping
Interests: Embedded ML, Virtual Reality, Film Photography, FPV Drones, Running