Ben Mallett

(801) 554-6074 | bencmallett@outlook.com | Boston, Massachusetts | LinkedIn | GitHub

Professional Experience

Software/Firmware Engineer - Running Tide (Portland, ME) *2022 - Present*

Working as part of a global team at a post-Series B startup to scale nature-based carbon removal strategies. Develop software and custom firmware for a reliable, distributed network of edge devices on a global team.

Remote Monitoring Buoys

- Implemented Zephyr RTOS device drivers in C for sensors ranging from off the shelf cameras and temperature sensors to custom sensing hardware for use in larger carbon removal verification systems
- Utilized custom Bluetooth Low Energy (BLE) service and satellite APIs to request and send sensor readings and device statistics from advanced Nordic, Zephyr RTOS, C based buoys
- Incorporated various sensors into device tree and board layout for Zephyr based buoys for use in sensor fusion and signal processing algorithms
- Developed Cron based jobs for sensor reporting, maintaining 99% reliability across buoy types
- Implemented driver functionality to adjust image quality, resulting in a cost/quality tradeoff that saved 40% on annual data cost per buoy per year
- Implemented AI data pipeline and trained machine vision models for on-buoy corrupt image detection
- Collaborated with electrical, mechanical, and AI engineers on a global team to implement bleeding edge embedded systems to feed AI data pipelines

Ocean Instrumentation and Control Systems

- Designed and implemented a multithreaded instrumentation and control system in Python for use in a computer vision AI quantification pipeline, improving data acquisition efficiency 25x
- Utilized SSL and Socket.IO for secure communications and Balena for fleet management
- Built, utilized, and integrated with various REST APIs for Postgres and GCS data storage
- Leveraged Docker, jest, React, Express, JavaScript, and TypeScript to develop, deploy, and test a virtualized CRUD application for product research and development in a CI/CD environment

Chlorophyll Sensor

- Built custom firmware and Zephyr RTOS sensor drivers for in-house chlorophyll sensor (fluorometer) yielding savings of $1800 per buoy enabling otherwise impractical scale

Technical Knowledge

Languages:	Python | C | JavaScript | TypeScript | D | C# | Java | C++
Tools/Systems:	Git | Docker | React | Express | Socketio | Node | GCS | Linux | CI/CD | SQL | Flask

Education

Northeastern University - Boston, MA

Master of Science, Computer Science *To be Conferred August 2024*

Bachelor of Science, Computer Science *Cum Laude* *2020 - 2023*

Projects

DRaw - Presented at DConf London '23 *2023*

- Utilized OOP, MVC, and the command design pattern to build a collaborative paint application in D

Planit - Inspiration Challenge Winner Amadeus Hackathon for Sustainability *2022*

- Utilized REST APIs along with a modified Dijkstra's pathfinding algorithm to find a user's best unique travel path while balancing CO2e emissions, time, and cost
- Implemented an experimental Eco mode to reduce rendering loads and API call density

Content Delivery Network (CDN) *2022*

- Leveraged IP geolocation and active measurements in a custom DNS server to route clients to the best content server available
- Implemented LRU and popularity caching mechanisms to reduce latency for content requests on custom HTTP servers deployed globally