Eugene Brodsky

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Experience

MetaSense • Embedded Firmware Engineer - May 2022 - Present

Primary responsibilities lie in the design, implementation, and test of our sensor subsystems for real time motion capture. Worked alongside cloud and hardware engineers to bridge the gap between hardware and SAAS infrastructure.

Accomplishments in firmware application development:

- Outperformed market competition in sensor output data rate. Implemented a wireless protocol capable of a 360hz data rate from 12 sensor nodes.
- Added ability to “link” RF listening nodes for wireless data redundancy, resulting in exponentially decreasing packet error rates.
- Streamlined user experience by automating configuration and calibration procedures – automatic WiFi network management, LED feedback codes, remote sensor calibration via GUI.
- Developed terminal shell capabilities to enable remote system management and logging.
- Migrated codebase to use the latest SDKs, resolved technical debts preventing hardware upgradation + firmware feature development.
- Created abstraction layers to support various hardware platforms (combinations of DKs and custom PCBs using nRF52840 and nRF52832 SoCs).

Made hardware recommendations based on improving user experience and accounting for constraints imposed by firmware. Accounted for dependencies in firmware when optimizations are made in hardware design. Listed are several accomplishments leaning in the hardware direction:

- Extended sensor battery life from 2 hours to 12 hours.
- Stewarded RF performance testing for the redesign of our RF antenna and PCB housing to reduce signal attenuation, resulting in 5x range improvement.
- Audited essential hardware functionalities via test software. Uncovered discrepancies between hardware operation and datasheet specifications, disqualifying certain components from consideration which did not meet product requirements

Skills: Software design and documentation, software testing and debug strategies, embedded power optimization, real time wireless communication systems, IMU sensor integration, WiFi module integration

Languages/Tools: C, Java, Python, Make, Git, Nordic nRF52 development environment, logical analyzers, oscilloscopes

Education

University of California, Berkeley - 2018 - 2021

Degree: BS in Applied Mathematics

CS Coursework: Structure of Programs, Data Structures, Algorithms, Security, Numerical Analysis

Math Coursework: Discrete Math, Linear Algebra, Abstract Algebra, Real Analysis, Complex Analysis

Coursework Projects

RaceRunner - 2D tile-based game in Java.

- Designed a pseudo-random world generation algorithm
- Other contributions – race mode, game architecture, and graphic design.

File Sharing Client - An interface for an end-to-end secure encrypted file sharing system.

- Developed logic to solve the enforcement of file ownership and privileges.