Best Buy Health
Embedded Software Intern
2022 CE/CS Student's 2nd Co-op

Best Buy Health serves more than 95,000 seniors across approximately 1,000 facilities, and growing.*

Assisted living.
18,000+ seniors served.

Skilled nursing.
3,000+ seniors served.

Independent living.
74,000+ seniors served.

*Best Buy serves approximately 1,000 facilities through the sale of consumer electronic products and services.

Co-op Description

Team

- Embedded Algo Team
- Purpose in creating algorithms and software that can anticipate and identify health and wellness related events
- Products include **fall detection algorithms**, fall risk assessment algorithms, and step counting algorithms
- Workplace type: Fully Remote

BHTC: Embedded Algorithms

Role & Responsibilities

Role : Embedded Software Developer

- Implement, integrate, test and release embedded software project
- Prototype the algorithm on next generation hardware device
- Learn and research on embedded system concepts
- Develop functional software specifications and/or tools under supervision
- Create, document and track tasks using proprietary issue tracking products

Benefits

- Employee Discount

Great Discount

Product: Lively Mobile

What is it?

- Personal Emergency Response device
- The fastest call response medical alert
- Go anywhere with it and reach certified Urgent Response Agents anytime

All-in-one medical alert

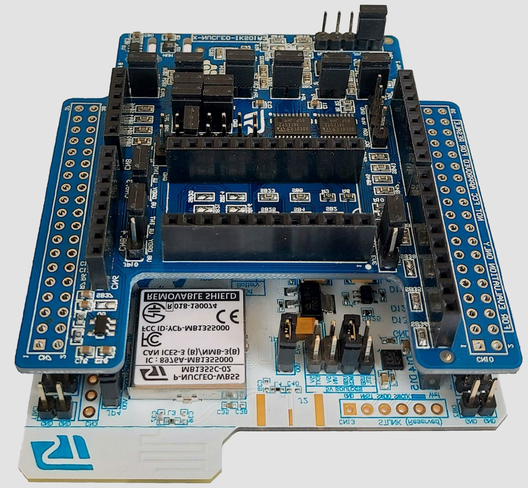
- 24/7 Help Response
- **Lively Fall Detection**
- Enhanced GPS
- Two-way communication
- FSA/HSA/HRA eligible
- More on web: https://www.lively.com/medical-alerts/lively-mobile-plus/

Project

Prototype algorithm for next generation product on selected sensor core Integrated Circuits(IC)

Accomplishments

- Implemented Lively Mobile Fall Detection on prototype hardware and successfully detected real falls.
- Implemented multi-sensor data acquisition on prototype hardware that will be used to improve fall detection.
- Prototyped Bluetooth Low Energy(BLE) communication protocol for tracking and geofencing to improve power consumption.
- Implemented a First in First Out(FIFO) buffering scheme for data acquisition to optimize motion data transfers.



STM32 Developing Kit & Tools Platform taking here as Example

Technical Learnings

Key Tools

- STM32 Cube Embedded Software Suite
- Windows Subsystem for Linux (WSL)
- C (programming language)

Key Concepts

- Bluetooth Low Energy (BLE)
  A Low-power wireless technology used to link devices together
- Sequencer
  The sequencer executes registered functions one by one
- First in First Out (FIFO) buffer
  A method for organizing the manipulation of data buffer
- Serial interfaces (e.g. I2C)
  Communication protocol used in microcontroller development
- Sensor (Accelero, Gyro, Magneto)
  Used to detect the motion of the device.
  Read datasheets for setting and connecting

Key Takeaways

- Fully Remote Working Experience
- Great Teamwork
- Technical Learning
- Keep On Learning New ways to tackle the Problems
- Standard Operating Procedures
- Do Not Hesitate To Ask Questions

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References

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