Thread-Based Data Glove

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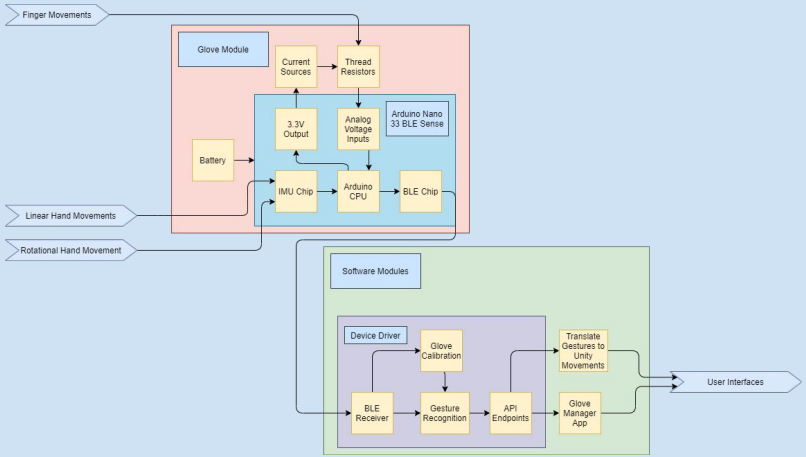
Background

- A data glove is a wearable input device that allows a user to interact with computer applications.
- Data gloves can measure a user's hand position, such as the bend of each finger and the rotation of the hand.
- Viewing and manipulating 3D models is frustrating and typically requires many clicks with a traditional mouse.

Goals

- Build a wireless glove that can sense hand movements and translate them onto a computer.
- Allow users to interact with 3D models through an API that can be used with various applications, such as Unity.
- Use the latest thread sensor technology developed in Professor Sonkusale's lab.

System Engineering Diagram



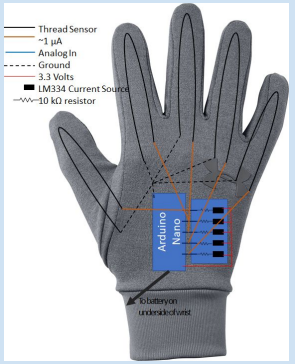
Project Takeaways

- Bluetooth low energy is inconsistent and not fully reliable. Windows support is limited as well.
- Sensor reliability is necessary for accurate gesture recognition.
- Gesture recognition is tough to get right; there are a lot of false positives and false negatives, neither of which are good.

Future Work

- Improve the latency between making a gesture and the object moving.
- Improve the accuracy of the gestures and the number of gestures.
- Improve the accuracy of the thread sensors and the reliability of the Bluetooth connection.

Hardware Design Diagram



Final Glove Iteration