

Universal Gesticulation Based Information Transferal System and Data Analysis

SiGlove

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SiGlove

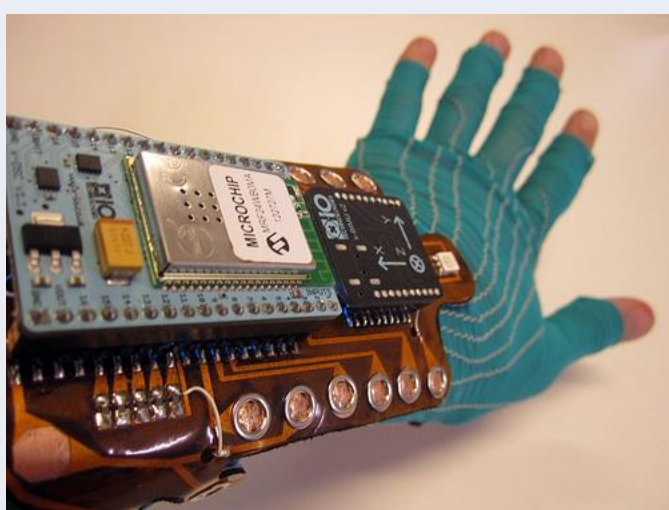
University of Washington CSE 477

Background

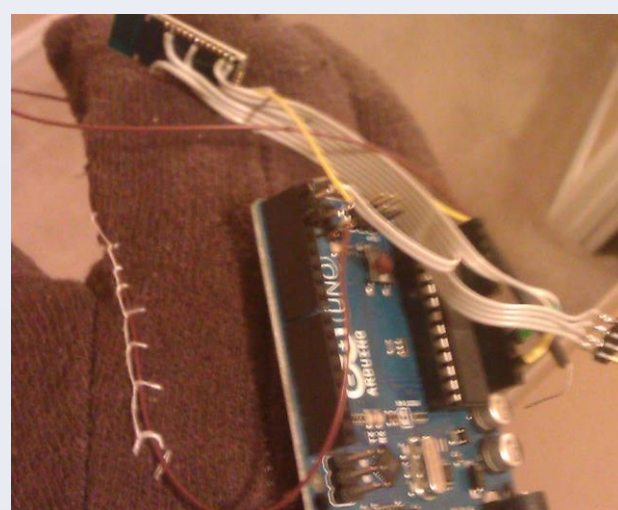
Often, a complicated UI makes interacting with our world more difficult.

Imagine driving, skydiving, or exercising while using these. xOSC and the Music Glove both have too many controls and the precision is too difficult to manipulate. The KITTY doesn't have a clean and simplistic UI, nor the form fitting factor of a glove.

xOSC



Music Glove

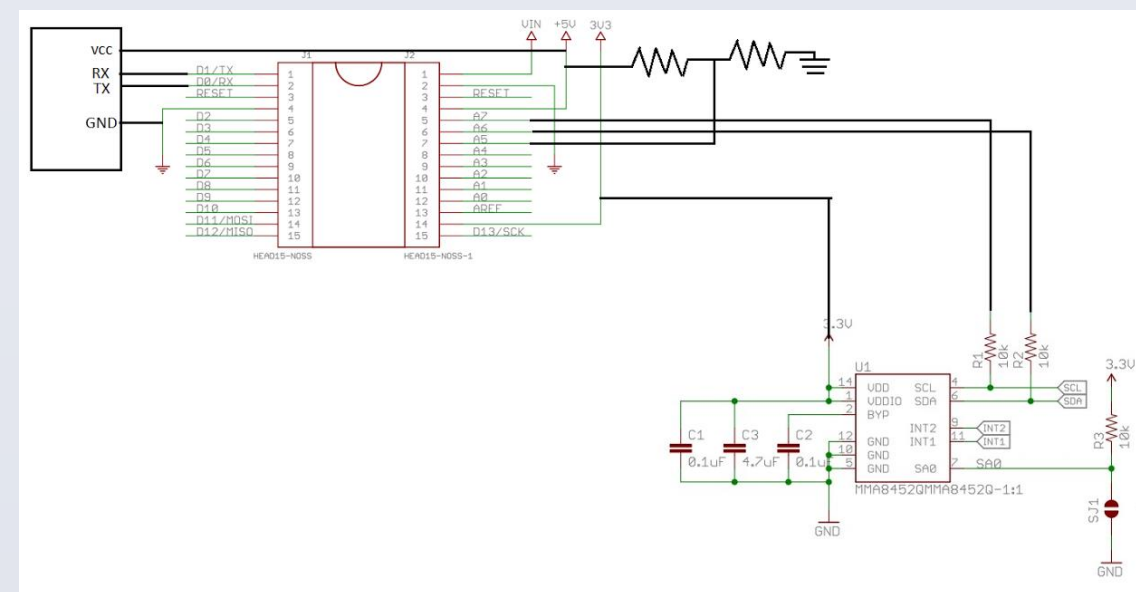


KITTY



Engineering Design

Arduino Nano subsystem to create a cheap and form fitting controller mechanism. By using the Arduino programmer system, sensor data could be sent in an easy to understand form.



Bluetooth provides the ultimate universal applicability to any digital device or system. A simple module allowed a wide range of connectivity throughout day to day life.

A flex sensor and accelerometer provided a large degree of motions that were intuitive to use but could also map a significant number of controls.

#	FLEX	Acc.	~
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The various controls were all very easy to map to a user's specific needs.



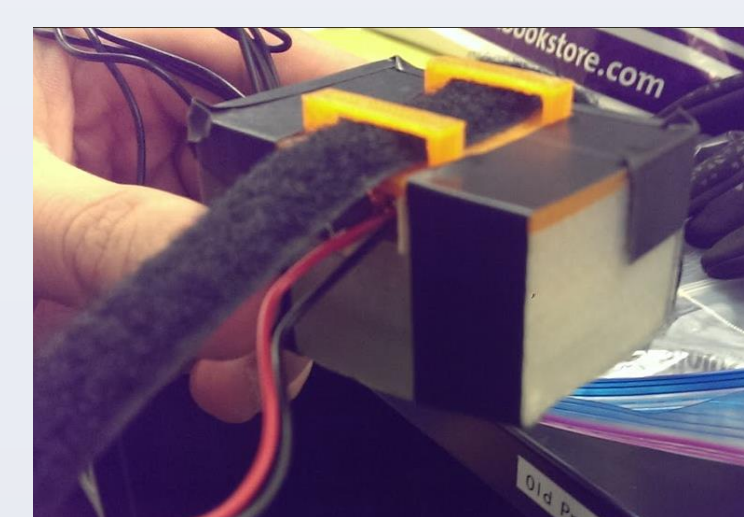
By sending easy to interpret signals through the Bluetooth module, programming applications becomes easy and adaptable to any situation. Whether the user wants an application for a computer, android phone, or Apple device, the system can be modified for the user's needs.

With an effective battery life and extensive planning, the system is able to last for hours and hours non stop without needing to recharge. However, when the system needs an extra breath of life, the battery can be fully charged quickly to go straight back to work.



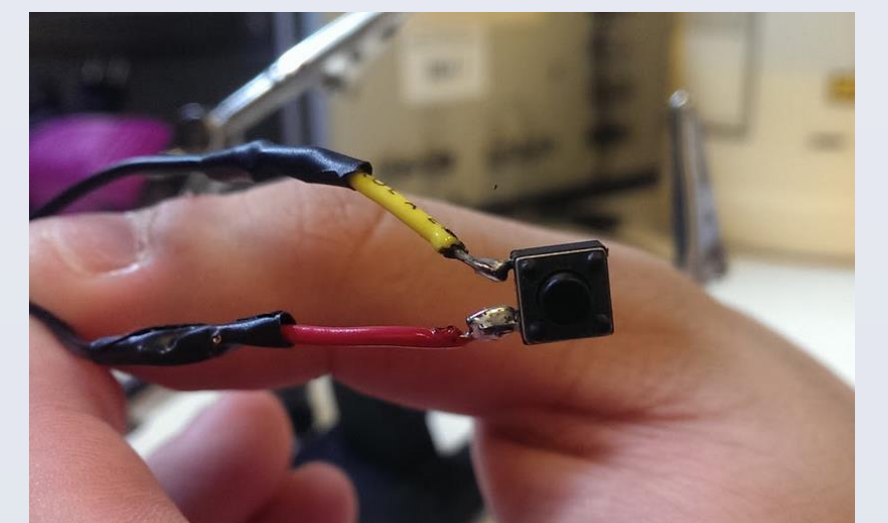
Our Solution

A glove based input system that can detect five different motions including bending your hand, rotating your hand vertically or rotating your hand horizontally. Signals are sent to Bluetooth enabled devices nearby.

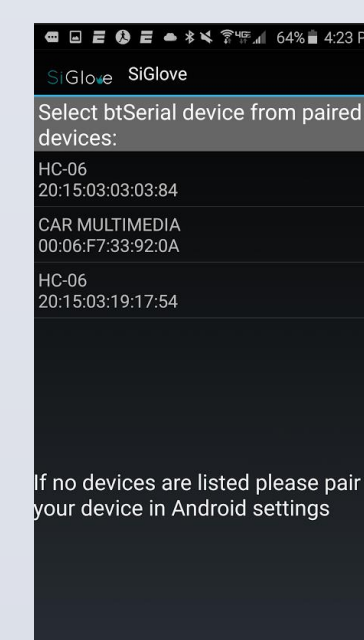


In order to improve comfort and fit, the system uses a 3d printed box to house all the different electrical components. By including a cut to display a charging port as well as a switch to turn the device on and off, the system becomes slick and simplistic to use.

By incorporating a button alongside the device to include a sleep mode, the system is able to see improved battery life and the ability to detect signals only when the user intends to send them. Locating the button near the thumb allows for easy, quick access.

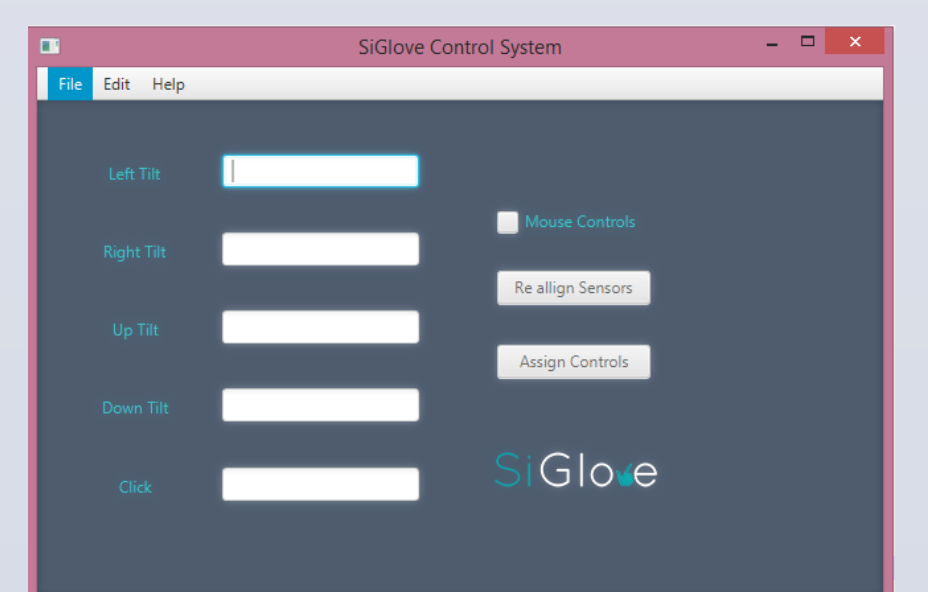


Results



The product successfully sent data to a variety of apps on both Android as well as PC systems. The android app was able to change songs as well as pause and play whatever music was playing at the time.

The PC application was able to type values that are preselected by the user upon the sensor inputs. The application was also able to control the mouse movements when the system was selected.



Upon testing, the battery was able to last nearly a dozen hours on continuous usage, whether in standby mode or with the button pressed. This was a sufficient length of time, since the majority of an average day, the system was off. Charging the system took about half an hour to fully charge.

More Information

Check us out at pie306.github.io/gLOVE

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