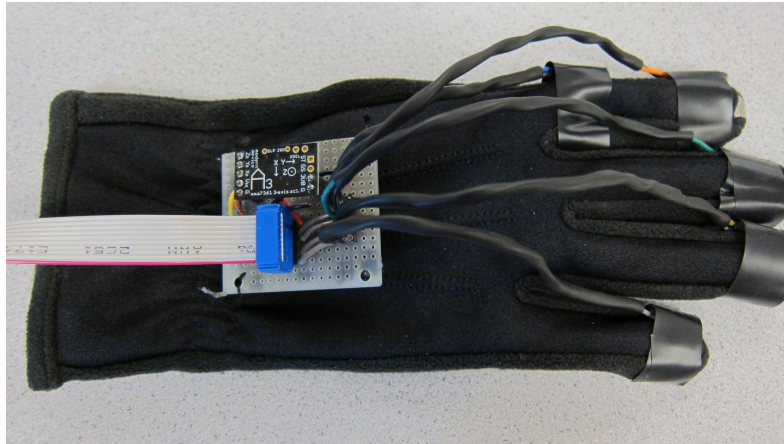


GLOMO GESTURE CONTROLLED MOUSE

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Abstract

Develop a gesture controlled wearable mouse with a joystick for gaming. Track the movement of the hand and accordingly move the cursor. Implementation of buttons for functionality of left and right clicks to aid the click, selection and gaming modes (ADS in First Person Perspective). The integration of this device along with a joystick to control the player movement in a game would add additional value to the device.

Motivation

A standard mouse has a dependency for a desk which may not be the most convenient option to move a cursor around the screen when you want a gaming experience. Normal mouse not only has a dependency but also does not have additional features for gaming. A gaming mouse is expensive. A smart way to track motion is to use an accelerometer. This is the idea behind Glomo. Use hand motion and gestures to move a mouse pointer with the option of hand held buttons for switching between perspectives/aim in gaming. The integration of the joystick makes it a dedicated gaming Glomo!

Goals

A. Milestone 1

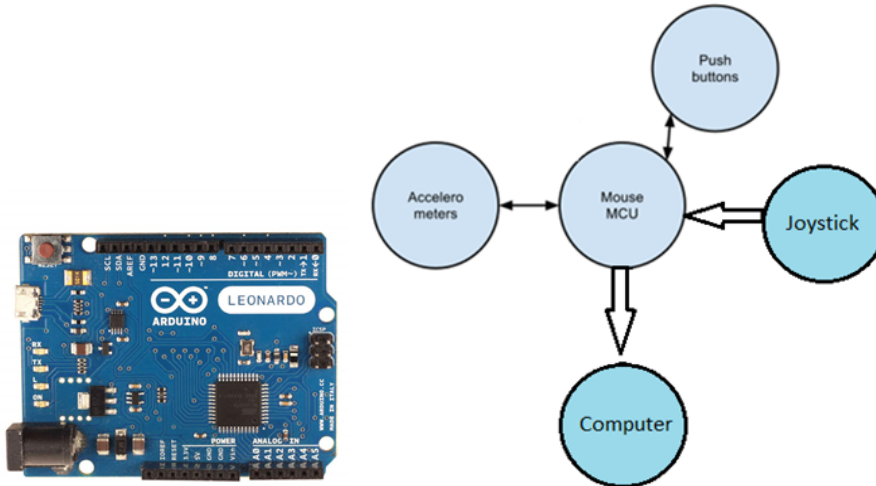
- Precisely read the accelerometer reading and implement error correction if any.
- Implement the motion of a mouse pointer on a screen using the values of MPU6050.
- Implement at least one of the gesture movements using the beta system.

B. Final Demo

- Reliable motion of the mouse pointer using the hand gesture.
- Implement both the left and right button functionality.
- Achieve the least possible response time.
- Implementing and integrating a joystick to control motion of a player similar to the usage of W A S D keys.
- Achieve a final system that is cheap and functional with a quick response time.

Methodology

- Implement the design on a microcontroller (Arduino) using MPU6050 accelerometer and gyroscopes(ADXL345) for the mouse functionality.
- The block diagram represents the high level interface of the system which is intended to be built.



- Push buttons for functionality of the left and right clicks.
- Joystick for W A S D keys to move the player.

Components

- Arduino Leonardo
- MPU6050 – Accelerometer + gyroscope
- ADXL345 – as a backup
- Joystick
- A couple of wires
- Breadboard
- Gloves
- Resistors
- Buttons

Evaluation

- The cursor moves in real time. Response time is quick.
- The left and right click functionality works.

- The joystick works and responds quickly.
- Gaming requires high response time. So is it possible to accept the delay?
- What is the range if made wireless?
- Additional controls work.

Timeline

Week	Task	Assigned To
Week 1: 11/09 - 11/15	Order parts, brainstorm ideas/ways to implement	Sumanth, Arjun
	Create Schematics, Identify challenges/corner cases	Arjun
Week 2: 11/16 - 11/22	Acquire parts, integrate the parts.	Sumanth
	Implement basic working principle, Check the functionality of devices.	Arjun
Week 3: 11/23 - 11/29	Configure the accelerometer, check for input data stream.	Sumanth
	Code the program to implement intended functionality.	Sumanth, Arjun
	Configure modes, clicks, keys to implement on the MCU.	Sumanth, Arjun
Week 4: 11/30 - 12/06	Implement the mouse functionality, joystick functionality.	Sumanth
	Check for precision, real time response, tweek for higher accuracy and precision.	Arjun
Week 5: 12/07 - 12/10	Testing of the device functionality, prep for game testing using joystick.	Sumanth, Arjun
	Adding additional functionality.	Sumanth, Arjun

Proposal Presentation

<https://docs.google.com/presentation/d/1fAp3lp6rfo7PvTtpPco-RrLsxdpE46SICEIQPjxJrxQ/edit?usp=sharing>

References

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