

GAMING GLOVE TEAM- 12

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PROBLEM & DESCRIPTION

- The aim of the project is to create a hand-worn glove like device that can be convenient to use for paying games.
- The device should be used on a palm with palm and finger gestures as inputs to the app .
- It should be easy to use (plug and play) and cost-effective .

REQUIREMENTS

- FUNCTIONAL

- Should be detected as a joystick on a PC.
- Must work on USB power.
- Needs to be real time and no lags .
- Should support
 - Pinches , bending of fingers and orientation of the palm.

- NON Functional

- Should be easy to wear , comfortable ,robust durable .
- And shouldn't interfere with keyboard and mouse usage.

REQUIREMENTS Contd ..

- **HARDWARE**

- TIVA C-series board.
- 6-axis MPU.
- Flex Sensors (Built using rubber tubing,ldr and an led)
- Mechanical buttons , wired , pcb and velcro.

- **SOFTWARE**

- Coded using TIVA board library collections and needs an USB Hid driver to be installed in the PC.

Project Plan

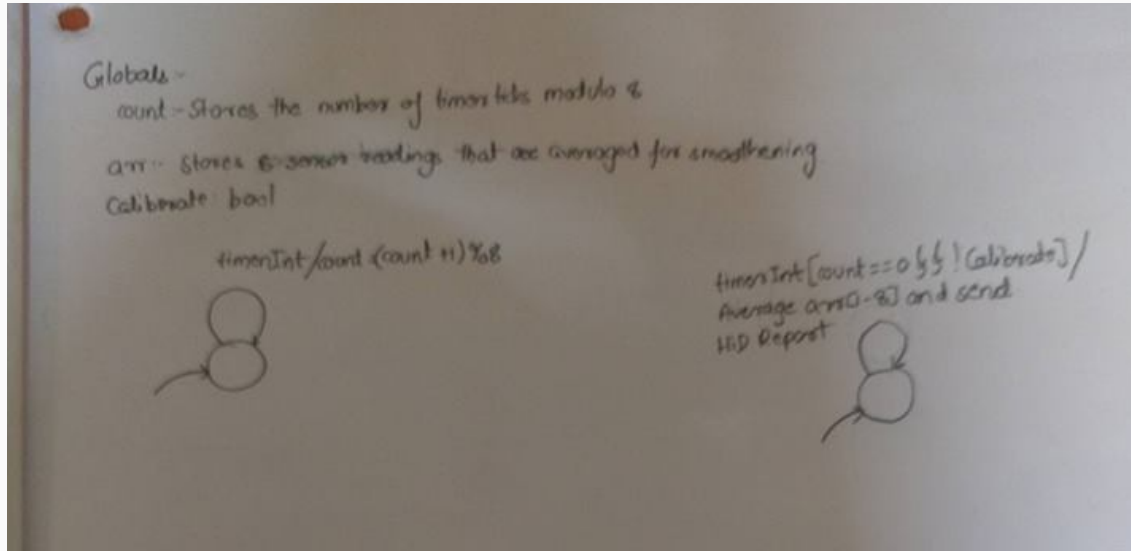
- Execution plan:
 - Fabricate a single flex sensor to check if it works
 - Interface the MPU with the MCU
 - Fabricate the other 4 flex sensors
 - Interface all other sensors with the MCU
 - Write USB code and code to read sensor values

Project Plan (Dates)

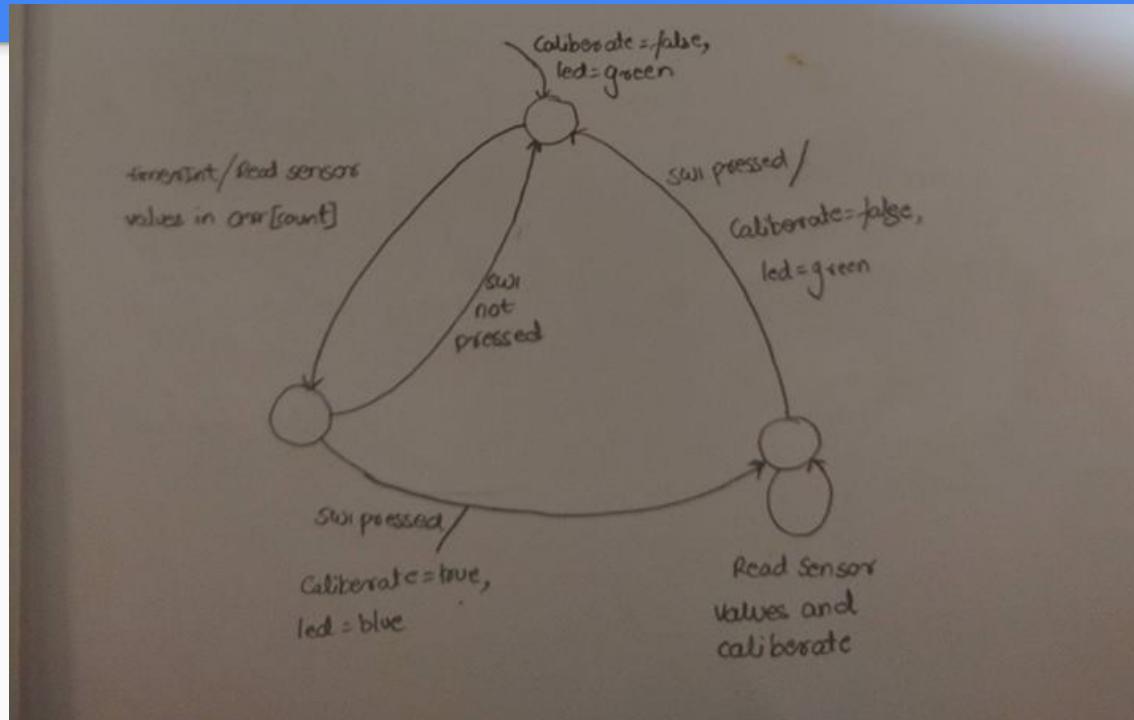
- 15/04: Start making an initial flex sensor
- 18/04: Make further flex sensors if the initial one works
- 22/04: Interface the MPU with the MCU
- 26/04: Interface other sensors with MCU
- 01/05: Start glove fabrication
- 02/05: Code USB
- 04/06: Finish up

STATE CHART

Globals



STATE CHART



INNOVATION & CHALLENGES

- Innovation to build up flex sensors and the concept of the glove .
- Challenges include -
 - Interfacing the gaming glove with the pc

TASK COMPLETED

- Made a cheap flex sensor
 - Calibration of the flex sensor was difficult
- Interfacing the MPU with the MCU was difficult, working with the I2C protocol basically

REVIEW , TEST CASES

- The glove is calibrated for the system and the for checking the fluid working of the glove
 - Checking the results of output with respect to various hand rotations and finger pinches.
- PRACTICAL-Games we played NFS MOST WANTED using the glove with very good gaming experience.

REUSABLE CODE

- The reusable parts
 - Code for reading and debouncing sensor values sensor values.
 - The code for I2C communication with the MPU.
 - The entire usb-dev-name code.

FUTURE ENHANCEMENTS

- Improvable-
 - Better design and making the glove with better materials.
 - Adding haptic feedback to the buttons.
 - Make device wireless possibly using bluetooth.
 - Better calibration of flex sensors.
 - Use to help physically challenged people.