Dextera Domini

X-Nihilo
ITSP 2016

Dextera Domini, a wearable electronic glove, is a gadget which can be used to access and operate an Android Phone with the use of dynamic and static hand gestures.

Team Members

Team: **X-Nihilo** **160**

Members:	Harshith Goka harshith9399@gmail.com	150050069 7045800396	808
	Sreekar Garlapati sreekar.dbz@gmail.com	150050065 8879145101	923
	Varshith Sreeramdass varshith.lfhs@gmail.com	150050084 8454890985	681

FacAd ID: sundar

Equipment Required

One 3-axis Accelerometer + Gyroscope: MPU6050
One MCU: AtMega2560
One bluetooth module: HC-05
Five unidirectional flex sensors.
An android phone with the app installed.

Subject to completion of the initial prototype:
Two bidirectional flex sensors.
Four Resistive touch sensors.

Functionalities

- Used to unlock a phone.
- Pre-defined gestures to open certain apps.
- Volume control.
- Some functionalities based on the apps.
    - Take a picture in the Camera App.
    - Scrolling and Magnification if applicable.
    - Play a song or seek to another song.

And so...

Working

Equipped with accelerometers, flex sensors, contact sensors, this glove can detect the orientation of various fingers real time, and transduce this analog data into digital data. The microcontroller present on the glove, along with the bluetooth module transmit this data short range.
The data transmitted to the android phone over bluetooth, interacts with an app that runs the appropriate events on the phone corresponding to the data received and the gestures indicated.
Provide additional capability to adapt to gestures and wearing effects using machine learning.

Cost and Schedule

Week;
0: Acquisition of Components. Learn basics of App Dev.
1: AVR Programming and experimenting with equipment.
2: Integrate the components and start app developing.
3: Complete initial design and add various features and gestures.
4: Improve and add additional features if possible.

Estimated Cost
7000INR

Skills to be acquired

- AVR Programming and PCB Building.
- Android App development.
- Machine learning - Adaptation to errors.
- Functioning of bluetooth module and transmission of data along with the associated programming skills.
- Functioning of accelerometers and flex sensors and study of transduction.