Why Play byJust Sitting on Table if You can Play by Your Motion

Gaming Console

Robotics Club
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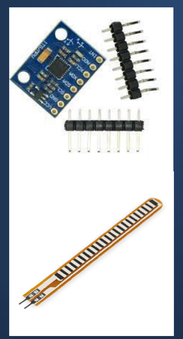
Abstract

Our project Gaming Cansole aims to create a wireless console for playing some of most common pc games.
While playing games We just control players by mouse movement, click and button press .Our aim was to convert this way of playing games and control players motion by real movement and task done by our our body.
Till now the following task has been achived successfully :-

- Mouse Cursor movement control over entire screen of pc - Aiming in the game.
- Clicking left and right buttons of mouse - Shooting in Game
- Pressing some keyboard keys - Movement of player in the game.

Introduction

- It consists of various types of sensors which reads out the data of orientation and various types of motion done by our body.



- The Sensors used was as follows:-
  - Inertial Measurement Unit(IMU).
  - Flex Sensors.

- To read data from the sensor and convert it into useful form we used Arduino and done some programming to improve the data quality so we can use to precisely control different hardware of pc.
- To transfer data from aarduino to pc we used communication over Bluetooth module .
- For Power Li-Po Baattery was used.

Participants

Team Members

- Niskarsh Kumar
- Madhukar Bharti
- Uday Kiran
- Shubhanshu Malpani

Mentor

- Anvesh Jadon

Thanks to Hemant and Ankit.

Mouse Control

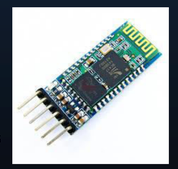
- Cursor Movement (Aiming in Game):-
  - To Control the Mouse Movement we used the data received from the IMU sensors .
  - IMU gives us data about acceleration, anguler velocity and magenatic field along all the three axis.
  - Data coming from sensors was havinng a lot of noise so to improve quality of data we applied Filters on its Data.
  - By These data we calculated the orientation of IMU which is mounted on players gun and accordingly controlled the mouse control.
- Mouse Clicking (Shooting in Game):-
  - To simulate the Mouse click we used the data received from the Flex Sensors.
  - Flex was stick on fingers of gloves worn by the player and gives data.
  - When player want to shoot then he/she bends finger which triggers a siganls based on flex' s output which simulates mouse click on pc.

Keyboard Key Control

- Players Movement in Game :-
- We used again the IMU sensors to control the players movement by simulating W A S and D key presses.
- IMU mounted on the leg of a person give us the data.
- From this IMU we get the orientation of leg with respect to standing orientation of leg.
- We checked this orientation and compared with respect to walking orientation in different direction and when it reaches to that extreme then simulated the right key presses .

Sending Data

- Data recevied from various sensors in Arduino are processed and quality improved after that it needs to be sent to pc.
- To transfer data from arduino to pc bluetooth communication was used by Bluetooth Module. We connected the bluetooth from serial port pins of arduino and transferred at optimum bit rates.

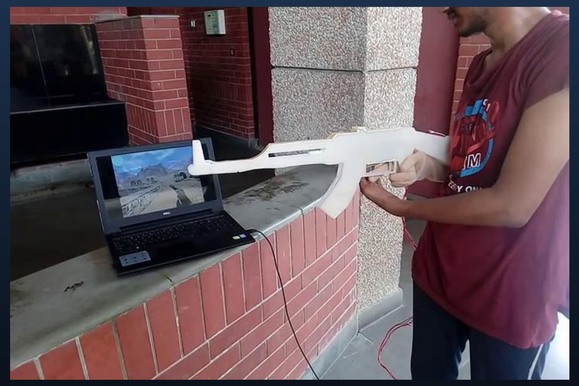


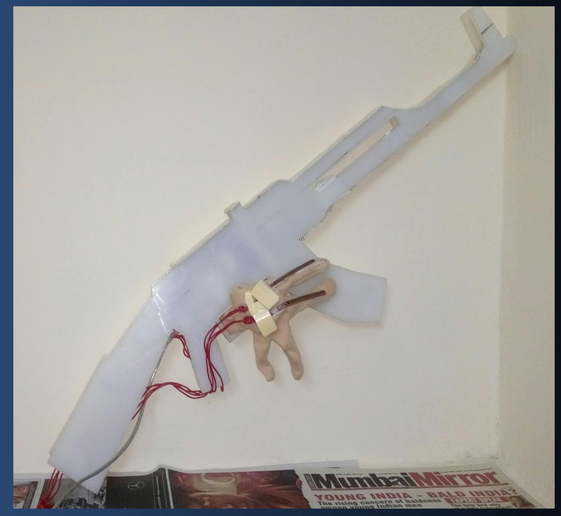
Data processing

- On Arduino;-
  - At first receiving data from sensors it was processed on Arduino to convert into meaningful data and improved its quality by applying filters.
- On PC:-
  - On receiving data on pc it was processed using Processing Software.
  - Processing softwarre get s control over different Hardware like keyboard and mouse.
  - The control of Mouse and Keyboard was done accordingly to data received from Arduino

Result

Overall result was that we was able to make a working console which control mouse and some keys and play game like CS, GTA 5, League of Legands……..





Future Aims

- Make the Console more customisable and able automatically detect different communication channel and sets the thresshold.
- Include more number of game control function.
- Make it Compitable with more number of Games.
- Increase its quality of data sent and mor accurate control over games

Source of Help

- Funding
  Robotics Club
- Tools & Equipments
  Robotics Club, 4i Laboratory
- Coordinators
  Ankit Kumar, Anvesh Jadon, Hemant Kumar, Mayank Mittal
- Evaluators
  Prashant Kumar, Arpit Agarwal, Abhishek Attal, Shubham Patel