Project 2
Alternative Controller

IGME 470

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Presented by

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Create an alternative controller and game that captivates the user.

A baseball-esque game using Arduino

Utilizing a Gyroscope and Accelerometer we can sense the swing and power of the "bat" and connect it to Unity to make a baseball game.
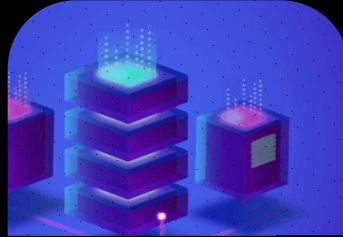
The system

1

The Bat
A physical bat is equipped with a 6-axis motion sensor (accelerometer and gyroscope). When the user swings the bat, this sensor reads the raw acceleration and rotation data in real-time.

2

Process Data
The sensor data is fed to an Arduino. The Arduino's code constantly "listens" for a swing. When it detects a motion spike that exceeds a set threshold, it processes this data to determine the swing's speed, timing, and angle.

3

Transmit & Visualize:
The Arduino formats this data into a simple string and sends it to a PC via Serial Com. A game engine like Unity listens to this serial data, triggering a "hit" in the virtual game and calculating the ball's trajectory based on the data.

Hardware Parts List

Controller
- 1x Arduino Uno (or Nano)

Sensor::
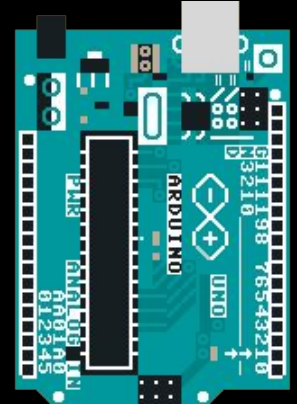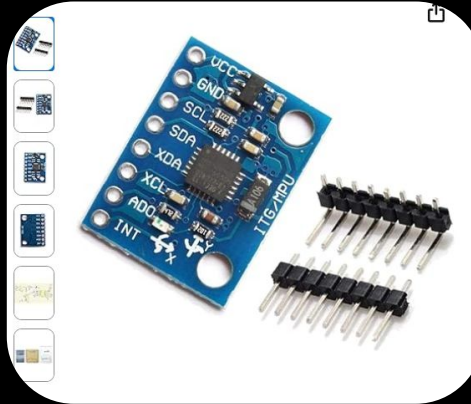- 1x MPU-6050 6-Axis Accelerometer & Gyroscope Module

The "Bat"
- 1x Wooden dowel or wiffle ball bat or PVC pipe (to mount hardware)

Power:
- 1x 9V Battery with snap-on connector and barrel jack

Connectors:
- 1x Solderless Breadboard
- Jumper Wires (Male-to-Male and Male-to-Female)
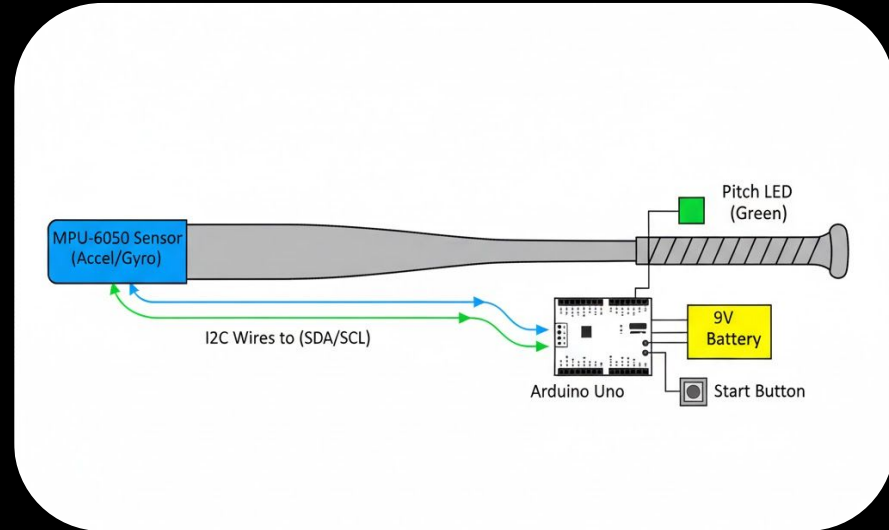- USB-B Cable (to connect Arduino to PC)

Hardware Sketch & Layout

Sensor (MPU-6050): Mounted at the end of the bat (the "barrel"). This location gives the maximum acceleration reading, making it easiest to detect a clear "hit" versus a practice waggle.

Controller & Power (Arduino & Battery): Mounted together near the handle/base of the bat. This keeps the center of gravity low and makes the bat easier to hold and swing, without wires getting in the way.

Connection: Wires will run from the MPU-6050 (end) down to the Arduino (base), secured with tape.

Thank you