CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

36462

Project Title

Building a Homerun

Abstract

Objectives/Goals

The goal of the project is to create a device that will help baseball players optimize bat motion. Two key components of a good swing are bat speed and followthrough.

Bat speed and followthrough can be tracked using a 6DoF (6 Degree of Freedom) sensor. This 6DoF sensor consists of a gyroscope and an accelerometer that can be used to track bat acceleration and angle.

Using this sensor for data collection, and an Arduino for data logging, data can be imported into Excel for data analysis.

With the data collected from the tests, charts can be created to identify swing acceleration, and deceleration, as well as time for followthrough or in other words, creating a better swing. These charts will help a batter be able to see their swing information and would help them be able to see area for improvement.

Methods/Materials

METHODS:

Step 1- Insert SD card into arduino that is attached to the bat.
Step 2- Walk outside and wait for thirty seconds for the arduino to calibrate.
Step 3- Swing bat with small power and with bad followthrough.
Step 4- Take out SD card and insert into computer for post-processing.
Step 5- Identify swing in Excel.
Step 6- Keep good data and discard bad data.
Step 7- Repeat steps 1-6 for each trial, but on step three, choose one of the following swing types:
Soft Power/ Good Followthrough
Medium Power/ Bad Followthrough
Medium Power/ Good Followthrough
Maximum Power/ Bad Followthrough
Maximum Power/ Good Followthrough

MATERIALS:

6DoF (Includes Accelerometer, and Gyro)
SD Card

Summary Statement

The amount of acceleration and follow through can be charted by sensors which is attached to a bat in order to optimize a batter's swing.

Help Received

My father has experience in the field of micro-controllers an electronics and was able to show me how to set up my graphs, data, and charts. My mother was able to coach me in my speaking skills because she has experience in the field of education and interacting with students.