Proposed Project Description

**Team Name:** We're Just Here To Graduate!

**List of team members (5 maximum):**

Kate Hjorth, Adrienne Miller, Addison Azar, Mike Guyette, Caroline Cho

**Brief Project Description:**

1-2 paragraphs describing what problem you are solving and what your project does.

Several sports involve the use of speed and agility drills, which still rely on user timing and user setup, inherently creating human error. Additionally, there is no standard for tracking results and analyzing data over a period of time to see improvement. Training for sports with emphasis on speed and reflex has not been modernized and is not technologically integrated.

We are creating an apparatus that includes 4-6 different pads that contain an LED light and pressure-sensor within them. These pads will be placed on the floor or on a wall for setup. Connected to an app over bluetooth, the user will be able to start a drill connected to the pads. The pads will light up one at a time and detect the amount of time it takes between lighting up and having the user press the pad. The amount of time will be tracked and stored for future data analysis. This project will be able to standardize drills regarding speed and reflex to help modern athletes train in many sports.

**Features demonstrate on Demo Day:**

List the **top 5** features that you are planning on demonstrating at the end of next semester.

1. Pads that detect touch in real-time
2. Ability of pads to light up for certain drills
3. Real-time data collection of time between light up and touch
4. Short term analysis of each rep of the drill (graph-making) + long term data storage of progress over time
5. App usage to pick drills
6. Bluetooth capabilities

**Technology Analysis:**

There will likely be several technologies that will be necessary to complete your project. List any key technologies and show that they are available, affordable, and accessible.

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Note that each team's budget will be on the order of $500 (depending on the final number of teams, team size, etc.). By accessible, I want you to show that you can reasonably incorporate the technology into your design.

We will need four-six multi-color lights with pressure sensors on the bottom/in them so that the lights have the ability to detect touch. We will need the ESP32 board with bluetooth capabilities. We will need robust casings that can withstand force, hold integrated electronics, and include adhesive capabilities.

Notes:

speed/endurance (changing downtime between rounds) , reaction time, accuracy (changes speed based ofn if you need more time to become accurate)

system "learns" - simple machine learning, picks up on tendencies of user

baseline / stored runs - based off that data, develops new sequences to improve weaknesses (building up software side)

learn right, left, backwards, forwards

ESP Now, a short message protocol - software side

hardware - multiple colors / numbers and user has to pick correct one ; get them in a certain order

user input to choose how many runs they want to do from choices provided