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Final Project Proposal

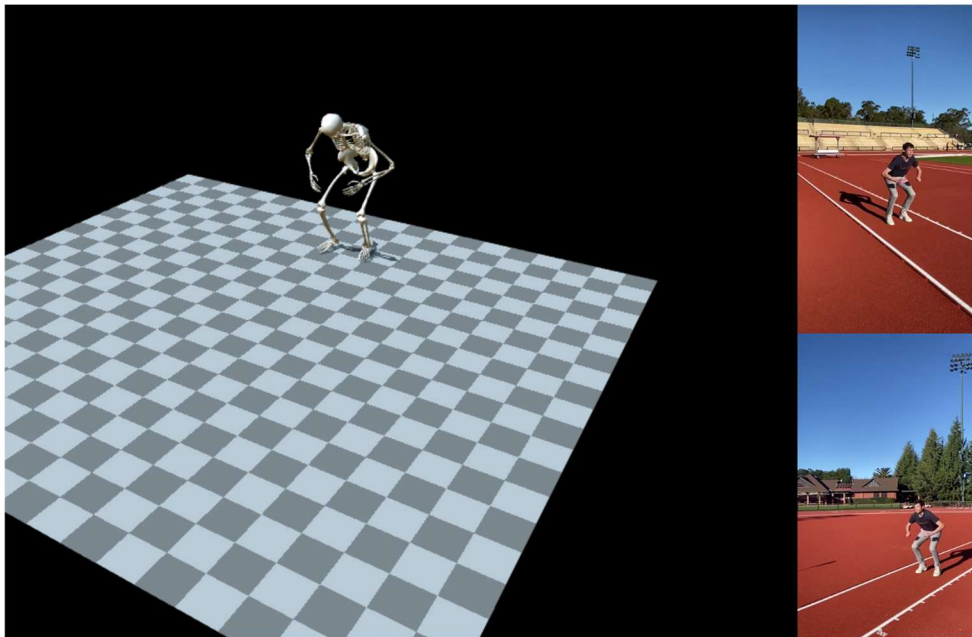
Team Number: 4

Project Name: Human Pose Estimation

Project Description

In the final project, our goal is to take in a video of an athletic action (jump, walk, run, e.t.c.) and output the 3-D coordinates of the person's joints during the movement (foot, knee, hip, elbow, e.t.c.). This will give us data that can be used in future research to better understand human motion during physical activity.

Task 1: The first step of our project is to learn how to use [OpenCap](#), a software developed by Stanford University. It is an application that can quickly streamline the process of calibrating two cameras, recording videos, gathering information on the kinematics, and displaying a video of a moving skeleton. We will be required to use two tripods to hold two iPhones at a steady location during the recording of a video. A visualization from the OpenCap website is provided below:



Task 2: Unfortunately, to the best of our knowledge, OpenCap is run completely in the cloud and only works on iPhones. So, although it is a great place to start gathering data, it cannot be used with our own software. So, the next step of our project is to create a similar system with our own software. We believe that this will be possible by using OpenCap's open-source code in [GitHub](#). To the best of our knowledge, it will work with the

stereo system used in the Baseball project, allowing us to use the calibration parameters we have found in earlier assignments.

We are unsure of how well the code will integrate with the stereo system. Furthermore, we need to find a way to convert the pose-estimation output into 2-D coordinates to render a skeleton for visualization. Therefore, we do not know how far we will be able to take this project. However, it will at least be a good starting place for future research in BYU on human pose estimation.