Test Plan

| To:	EC463
From:	Howell Xia, Jilin Zheng, Anish Sinha, James Knee
Team:	2 – AI Coach
Date:	11/18/2024
Subject:	1st Prototype Test Plan

1 Required Materials

1.0 Hardware

- A computer
- Integrated or connected camera
- Spacious and flat area

1.1 Software

- Internet connection
- Web browser that can run JavaScript

2 Set-up

We have configured our program to be a webapp accessible via the URL on our GitHub page: https://github.com/AI-Coach-PT/ExerSights. We have developed several different interactive webpages using HTML, CSS, and JavaScript. The user will click on the URL to launch the program, which will run locally on the client-side.

Once the program is running, the user can navigate between the different pages. The *Home* page simply displays some welcome text and a disclaimer. The *About* page is currently empty, but we plan to put project information on it. The *LogIn/LogOut* button allows users to link a gmail account to the current session. We have incorporated user-saved exercise settings, and plan to add more features involving user accounts in the future.

The *Catalog* page contains the 4 exercise pages we have currently implemented. Navigating to an exercise page will request access to a camera. Once given permission, the center of the page will display the camera feed, the computer vision model, and a feedback/configuration panel. When the user is in frame and attempts the exercise, the panel will display exercise-specific feedback based on joint and limb angles and location. The user can configure the rep count and the exercise settings to adjust the exercise to their liking.
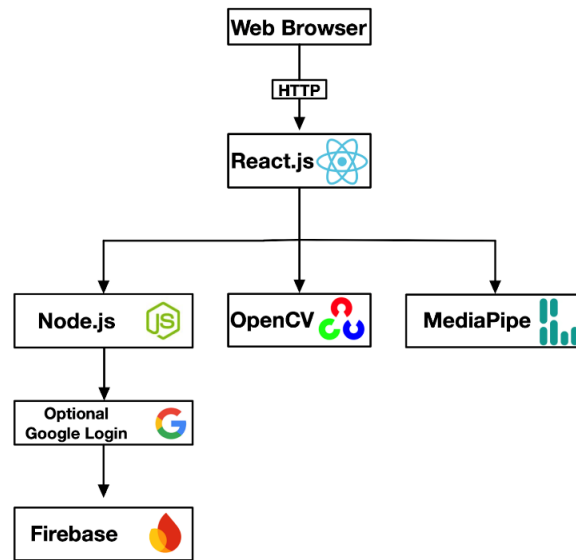
3   Pre-testing Setup Procedure

3.0   Connect one of our laptops to the internet.

3.1   Place the laptop onto a desk or bench, with the integrated webcam facing forward.

3.2   Open the URL on our GitHub page.

4   Testing Procedure

4.0   Demonstrate navigation and show the different webpages.

4.1   Open an exercise page; the squat is easiest to demonstrate in public.

4.2   Enable webcam permissions and demonstrate user login.

4.3   Show the computer vision model landmarks within the webcam feed.

4.4   Have a user perform the exercise, which will demonstrate the live feedback.

4.5   We take a screen recording of a set of squats to analyze for accuracy. For selected frames, we will measure the on-screen knee angle with a digital protractor and compare it with the displayed angle value in the feedback panel.

4.6   Configure different settings for the exercise and show the differences.

4.7   Demonstrate saved exercise settings for user accounts.

5   Measurable Criteria

5.0   The webapp should be able to run from any chosen computer.

5.1   Users will be able to navigate through the different pages.

5.2   The camera module will display the live feed and computer vision model with negligible lag.

5.3   The computer vision model will accurately detect limb and joint angles, with less than 5º margin of error.

5.4   The feedback and rep count will change in real-time based on the camera feed, with less than 200ms of delay.