Test Plan

To: EC464

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Team: 2 – ExerSights(AI Coach/PT)

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Subject: Final Test Plan

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1 Required Materials

1.0 Hardware

- A computer and mobile phone
- Integrated and/or connected camera
- Spacious and flat area

1.1 Software

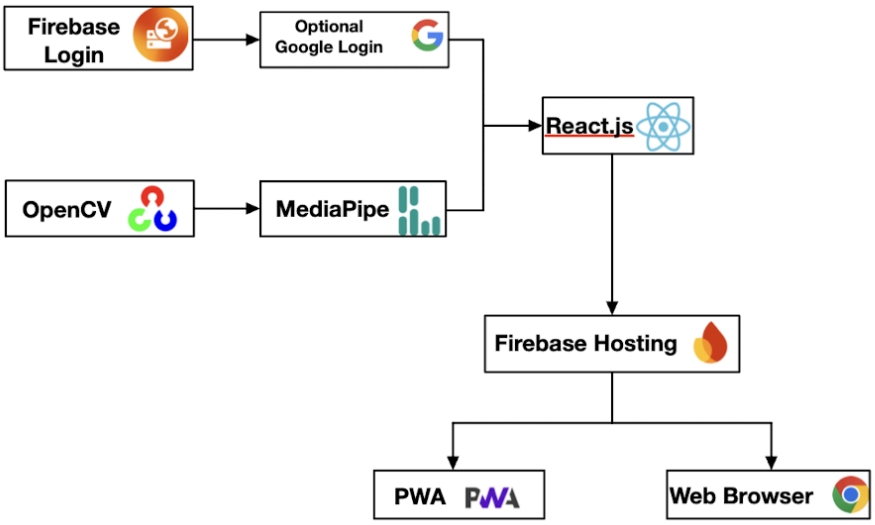
- Internet connection
- Web browser that can run JavaScript

2 Set-up

We have configured our program to be a webapp accessible via the URL which can be found here: https://exersights.web.app/. We have developed several different interactive webpages using React. 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 serves as a welcome to users and contains a video tutorial and disclaimer. The *Catalog* page lists the current exercises and allows users to navigate to them. The *Program* page allows users to create custom workout programs. The *FAQ* page contains answers to commonly asked questions, limitations of the app, and a contact form allowing users to submit feedback or requests for new exercises. The *About* page contains information on the developer team. The *LogIn/LogOut* button allows users to link a gmail account to the current session. We have incorporated user-saved exercise settings, workout programs, and pinned exercises to the user accounts.

Navigating to an exercise page from the Catalog 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 and phones to the internet.
3.1 Place the laptop onto a desk or bench, with the integrated webcam facing forward.
3.2 Connect an external webcam to the laptop in addition to the integrated.
3.3 Prop phone up on the desk. Perhaps use a water bottle to keep the phone vertical.
3.4 Open the URL found here: https://exersights.web.app/

4 Testing Procedure

4.0 Load application and show the different web pages focusing on single page implementation.
4.1 Open an exercise page of the tester's choice, we suggest squat as it is easiest to demonstrate.
4.2 Demonstrate user login. Show the ability to switch between multiple cameras.
4.3 Show the computer vision model landmarks within the webcam feed.
4.4 Perform an exercise which will demonstrate audio/visual feedback (test accuracy for 10 reps).
4.5 Demonstrate the help modal, timer, and video upload feature.
4.6 Demonstrate the settings modal. Have the user change the targets and retest the exercise. The user can also test the voice select, angle display toggle, and skeleton display toggle.
4.7 Switch to a mobile device and demonstrate how you can add the PWA and once downloaded use without internet.
4.8 Navigate to the FAQ page and demonstrate the feedback form. Show survey responses.
4.9 Demonstrate exercise program feature.
4.10 Present the Firestore database and its stored user information.
4.11 Demonstrate the GitHub CI/CD pipeline, specifically the security scanners.
4.12 Show/perform system latency tests, angle accuracy measurements, and website availability.

5 Measurable Criteria

5.0 The app should be able to run from any chosen computer or mobile device with a responsive UI.
5.1 The computer vision model will accurately detect joint angles, with less than 5^{o} margin of error.
5.2 The feedback will be real-time based on the camera feed, with less than 200ms of delay.
5.3 Demonstrate how the user can see visual feedback from at least 5ft.
5.4 The repetition count accuracy must be at least 90% given the model is stable.