SE 216 – SOFTWARE PROJECT MANAGEMENT
REQUIREMENTS DOCUMENT

PROJECT NAME: **TRUE POSTURE**

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REQ. #	FUNCTIONAL REQUIREMENTS
1	**Target Area Selection =** Users should be able to choose a specific exercise or target area after opening the app, triggering the display of pre-prepared animations related to their selection target area.
2	**Movement Monitoring and Analysis =** The app must access the device camera and employ image processing techniques to analyze users' movements in real-time, offering detailed feedback on the accuracy of the performed exercise. Also must give feed-back to the user percentage of correct movements.
3	**Validation by Professional Trainers =** Ensure that the app's feedback on exercise form aligns with assessments from professional gym trainers, achieving a concurrence rate of 90% or higher.
4	**Timing Accuracy Assessment =** The app should evaluate users' movement timing through the camera and provide feedback on whether the exercise was executed within the correct time. And give some suggestions for improvement to the user in case of timing errors.
5	**User Membership System =** Users can create the account by providing such as email, username, and password, to ensure a secure registration process.
6	**Cloud-Based Image Processing =** In case of where the user's device is not enough performance for image processing, the application should switch to cloud computing methods. To access this feature, users must pay via a membership system
7	**Progress Tracking =** There should be progress tracking functionality, enabling users to view historical performance, including correctness percentages for each exercise attempted.
8	**Optimal Camera Position Feedback =** While users perform movements, the application should analyze the exercise type (e.g., dumbbell press) and provide real-time guidance on the optimal camera position. For instance, it could suggest capturing the exercise from the front for a dumbbell press.
9	**Real-time Feedback =** Provide real-time feedback to users during exercise sessions, allowing them to make immediate adjustments to their form and timing based on the app's analysis.
10	**Goal Setting =** Allow users to set fitness goals and track their progress towards these goals.

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REQ. #	NON-FUNCTIONAL REQUIREMENTS
1	**Reliability =** Ensure a minimum 99% accuracy in detecting motion. And handle camera sensor errors gracefully, providing clear error messages.
2	**Performance =** Detect motion within 1 second and support simultaneous detection from multiple cameras without performance degradation.
3	**Accessibility =** The application must be compatible with different languages across the world.
4	**Security =** Implement encryption for camera-application communication and ensure secure storage of captured images in compliance with data protection regulations.
5	**Compatibility =** Support various camera models and brands, including major manufacturers, and ensure compatibility with common video streaming protocols.
6	**Availability =** Maintain an uptime of at least 98% and incorporate failover and redundancy mechanisms to handle camera or server failures.
7	**Usability =** Design an intuitive user interface for configuring and monitoring camera settings, and provide clear notifications for detected motion events.
8	**Power Consumption =** Optimize the application for minimal energy consumption on cameras, offering power-saving modes during idle periods.
9	**Environmental Considerations =** Factor in environmental conditions such as weather and temperature, ensuring the application's robustness in various scenarios for compatibility with outdoor use.
10	**Maintenance and Upgrades =** Implement a streamlined process for software updates and patches, providing tools for remote diagnostics and troubleshooting.
11	**User Membership System =** The system must be designed to synchronize data across devices, keeping user information, settings, preferences, and activity records up to date regardless of the device used

Project GitHub Account

https://github.com/SE216-8/TruePosture