GYM MANAGEMENT SYSTEM : AI BASED PERSONAL TRAINER

ABSTRACT

Now a days virtual assistant is playing a very important role in our daily activities and has become an inseparable part of our lives. As per the Clutch survey report that was published in 2019, almost 27% of people are using AI virtual assistants for performing their day-today activities. AI is an emerging field that we aim to explore through this project of AI-based workout assistants. In our work, we introduce Fitcercise, an application that detects the users exercise pose counts the specified exercise repetitions and provides personalized, detailed recommendations on how the user can improve their form. The application uses the MediaPipe to detect a person's pose, and afterwards analyses the geometry of the pose from the dataset and real-time video and counts the repetitions of the particular exercise.

This is an AI-based Workout Assistant and Fitness guide to guide people who don't have access to the gym but are still willing to work out at home to maintain their physique and fitness and keep their body in good shape. To help them perform the exercises correctly and prevent them from chronicle and immediate injuries. Most gyms have a wide variety of exercise equipment and also have trainers who guide us about the exercise and its correct posture. But the unavailability of the above equipment and trainers can be an important reason that can stop us from doing exercise at home. We aim to build an AI-based trainer that would help you exercise more efficiently in your own homes. The project focuses on creating an AI algorithm to help you exercise, by determining the quality and quantity of repetitions which is done by using pose estimation running on the CPU. This project, which will have a non-distractive interface, intends to make exercising more easy and more fun.

IMPLEMENTATION AND ALGORITHM:

Here we are using different libraries such as **Open CV** and **MediaPipe** which is a library using ML algorithms along with different numerical and algorithms.

The MediaPipe pose estimation tool uses a 33 key points approach wherein it detects the key points and accordingly uses and studying the data set estimates the pose. It tracks The pose from the real-time camera frame or RGB video by using the blaze pose tool that has a Machine Learning approach in pose detection.

ADVANTAGES:

1. More effective than training on your own
2. Train more, Pay less.
3. Flexibility in Schedule
4. Accessibility – any time, any where.

Online training is a new way of getting personal training. It gives the opportunity to train with a fitness experts of your choice. Both people who either go to gym or workout at home can take the benefit of these services. Since one is not supposed to be physically present at gym therefore it is convenient to many. Moreover it comes at a price which is affordable for most of us.

LIMITATIONS:

1. The application can estimate the poses and count repetitions for a limited number of exercises as pose estimation using computer vision for some exercises and postures can be difficult.

2. The application is developed as a cross-web application and is not used as a mobile android/ios application.

3. The application cannot capture multiple people in the frame in the real-time system.