

Real Time Fitness Tracking and Analysis using BlazePose Pose Estimation

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Abstract: *Inactivity is one of the main causes of obesity which has affected many people worldwide. Studies show that fitness is an important goal for a healthy lifestyle and is been used as a measurement for health-related quality of life. A fitness trainer can motivate and teach users to do exercise daily and stay fit and healthy. However, to use a fitness trainer might involve a huge cost and sometimes is not suitable for a certain setting. Exercises are very beneficial for personal health but they can also be ineffective and truly dangerous if performed in an incorrect method by the user. There are lot of mistakes made during a workout when user workout alone without supervision like wrong form which could result fatal for user as they can pull a hamstring or even fall due to it. In our project, we introduce AI Trainer, an application that detects the user's exercise pose and provides personalized, detailed recommendations on how the user can improve their form. Pose Trainer uses the state of the art in pose estimation module known as "BlazePose" tool from "MediaPipe" to detect a user's pose, then evaluates the pose of an exercise to provide useful feedback. We record a dataset of over 1000 keypoints coordinate of parts of body in correct and incorrect form, based on personal training guidelines, we build a machine learning algorithm for evaluation. AI Trainer works on six common exercises and supports any Windows or Linux computer with a GPU and a webcam*

Keywords: AI Fitness Trainer, Machine Learning, Pose detection, BlazePose, Health, Workout

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