

ABSTRACT

The rapid development of electronic technology has driven the creation of various devices that help people in their daily activities. One field that benefits from technological advancements is sports, where innovations in science and technology continually strive to address existing problems and lighten human workloads. Push-ups, as a crucial physical exercise for strengthening the biceps and triceps, require proper monitoring to ensure correct technique and optimal results. In the era of Artificial Intelligence (AI), there is an increasing need for programs that can detect and recognize push-up movements in Real-time within videos.

This final project, titled "Real-time Push-up Counter in Video," aims to present a system capable of detecting push-up movements in Real-time. Utilizing AI and Computer Vision technology, this system can identify push-up movements, accurately count repetitions, and provide detailed feedback on technique and workout effectiveness. Additional features such as logging the number of push-ups based on time of day (morning, afternoon, evening) and visualizing the push-up path in graphs are expected to offer a more interactive and informative workout experience, both for users at home and in fitness centers.

The research conducted in this final project demonstrates that the system operates effectively, with a high level of accuracy in counting body angles and push-up repetitions. The system ensures that only correctly performed push-up movements are counted. Additionally, the automatic up and down alerts ensure that users can promptly adjust their body position. Data recorded in text files and the visualization of push-up trajectory provide a deeper understanding of user performance and consistency, making this system an effective tool for supporting more efficient and measurable physical exercise.

Keywords: *Artificial Intelligence, Push-up, Motion Detection, Real-time, Physical Exercise*