Mini Project – 2B

AI Based Fitness Mentor

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AI BASED FITNESS MENTOR

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INTRODUCTION

- Artificial Intelligence (AI) is a transformative technology that enables machines to learn, reason, and perform tasks that typically require human intelligence, often to enhance efficiency and accuracy

- The AI-based Fitness Mentor integrates advanced AI algorithms with fitness tracking technology to revolutionize workout routines and exercise precision

- This project aims to enhance fitness training by making exercise more effective, safer, and tailored to individual needs

LITERATURE REVIEW

Sr. No.	Name of Paper	Author	Methodology	Research Gap
1.	AI-Fitness Trainer ISSN 2456-4184 04/04/2024	Samiksha Katkar, Akanksha Mohite, Swarangi Patil, Akshay Agrawal, Sanketi Raut	The AI fitness trainer, built using Flutter, MoveNet, and a transfer learning layer, features an advanced system architecture aimed at delivering users a smooth and efficient fitness experience. This setup combines powerful technology to create a user-friendly and effective tool for personalized fitness training.	1. Maintenance Challenges 2. Modifying the final layer for specific task
2.	AI-Driven Fitness Coach: Webcam-based IEEE 02/2024	Bharath Kumar. V, Anitha Julian	For effective tracking, the system must set up Media Pipe, derive joint angles, compute postures, and send alerts using AI.	1. Lacks intensity tracker 2. Object detection

Sr. No.	Name of Paper	Author	Methodology	Research Gap
3.	AI GYM Trainer DOI:10.13140/RG.2.2.29212.30089 June 2024	Ahsan Ashraf, Areebul Haq, Kantesh Kumar, Muhammad Moiz Alam, Talha Shahid	The AI-fitness trainer developed with Flutter, MoveNet, and a transfer learning layer which presents a sophisticated system architecture designed to offer users a seamless and effective fitness experience.	1. Personalization Challenges 2. Data Dependency
4.	AI Fitness Model using Deep Learning IJARSCT eISSN 2581-9429 02/2024	B Adibasava, Gowtham R, Dr Asha K H	The AI Fitness Model revolutionizes workout tracking with real-time feedback, personalized insights, and adaptive routines using Open CV, MediaPipe, CNNs for optimized results.	1. Responsive and seamless user experience. 2. Performance concerns

LIMITATIONS OF EXISTING SYSTEM

Advanced Personalization

Deeper AI for comprehensive fitness customization.

Integration with AR/VR

Use virtual reality for fun, interactive workouts.

Injury Recovery Help

AI-designed recovery exercises after injuries.

Social Features

Group workouts, challenges, and friendly competitions.

Emotional and Mental Health Monitoring

AI tracking emotional well-being during workouts.

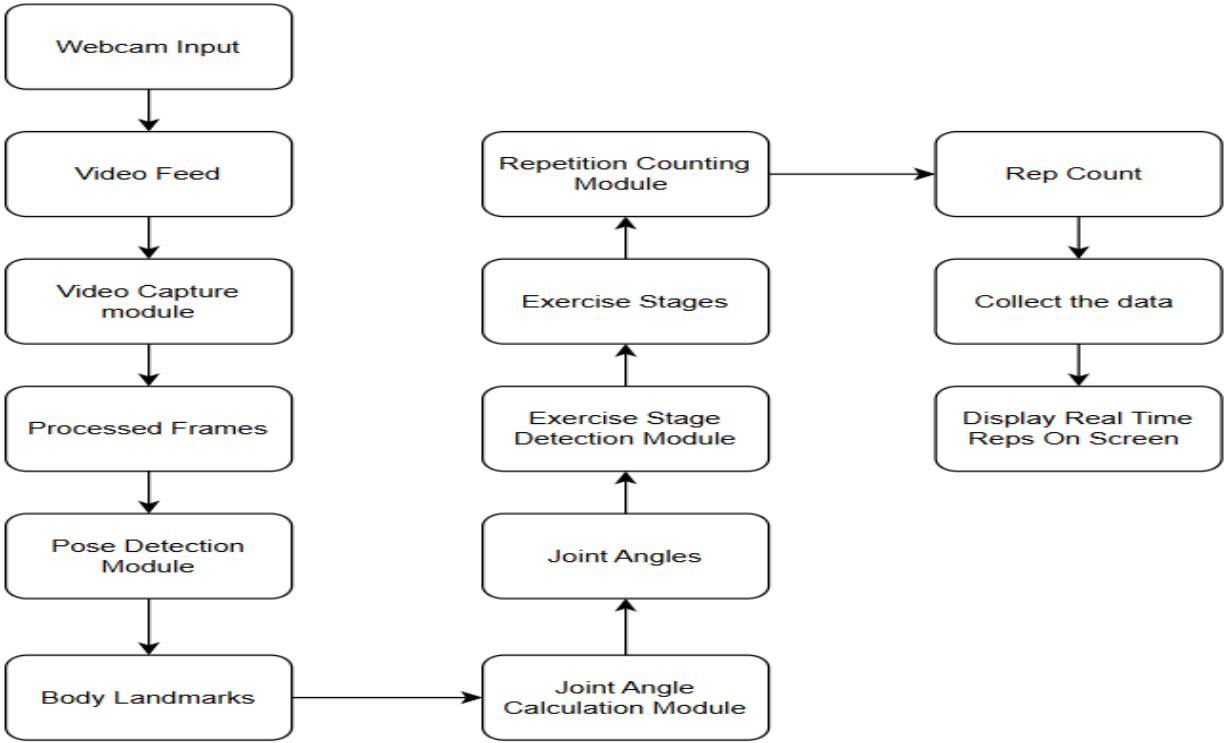
Health System Connection

Link AI with healthcare for complete fitness support.

PROBLEM STATEMENT

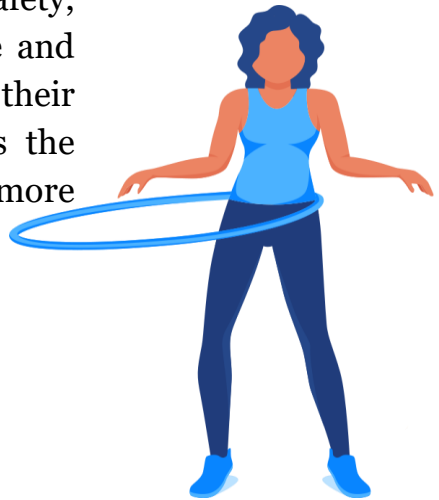
Fitness training often lacks real-time monitoring and feedback on exercise form, leading to ineffective workouts and increased risk of injuries. Many individuals struggle to achieve their fitness goals due to a lack of personalized guidance, ineffective workout routines, and improper exercise form. Traditional methods fail to adapt to individual needs, resulting in suboptimal performance and progress. Inconsistent feedback and lack of posture correction further exacerbate the problem, making it challenging to achieve fitness goals. Addressing these issues requires the integration of advanced AI technology to deliver accurate, real-time insights and adaptive workout routines, enhancing safety, efficiency, and overall fitness experience.

SYSTEM ARCHITECTURE



CONCLUSION

The AI Fitness Trainer project offers an innovative solution to modern fitness challenges by leveraging artificial intelligence to provide **personalized workout plans**, **real-time feedback**, and **adaptive routines** tailored to individual needs. Through **motion detection**, and **injury prevention mechanisms**, the system enhances workout safety, efficiency, and effectiveness. By making advanced fitness coaching more accessible and engaging, this AI-driven approach empowers users of all fitness levels to achieve their health goals in a cost-effective and scalable manner. The AI Fitness Trainer has the potential to revolutionize how people approach fitness, promoting healthier, more consistent lifestyles.



FUTURE SCOPE

The scope of the AI Fitness Trainer project is to develop a comprehensive, AI-powered solution that provides personalized workout plans and real-time feedback on exercise form for both gym-goers and everyday individuals. It includes creating adaptive workout routines based on individual fitness levels, goals, and progress, utilizing motion detection to prevent injuries and improve technique. The project will integrate with wearable devices to track real-time health metrics like heart rate and calories burned, ensuring continuous progress monitoring. Additionally, it aims to be an accessible, user-friendly, and scalable solution for all fitness levels, promoting safe and effective workouts.

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- B Adibasava, Gowtham R, Dr Asha K H; "AI Fitness Model using Deep Learning", February 2024

THANK YOU