HACKATHON PROJECT OVERVIEW

Project Name: XRcise
Problem Statement & ID: AI Based VR Physiotherapy and Fitness Simulator , ID 4
Team Name: Martians
College: DES Pune University
City: Pune

PROPOSED SOLUTION

Idea/Solution/Prototype Overview

Detailed Explanation:

AI-driven VR app for physiotherapy and fitness with real-time motion tracking and gamified workouts.

Key Components:

- **AI Exercise Recommendation** – Personalized plans
- **Motion Tracking** – Ensures correct form
- **Gamified Workouts** – Engaging VR exercises
- **Virtual Trainer** – Real-time feedback

How It Addresses the Problem:

- Increases engagement and adherence
- Provides instant posture correction
- More interactive than traditional rehab

Innovation & Uniqueness:

- AI + VR for personalized training
- Gamified physiotherapy experience
- Cutting-edge motion tracking and AI integration

APPROACH

Methodology to Solve the Problem:

Step-by-Step Approach:
1. **User Input** – MCQ-based assessment
2. **AI Processing** – Personalized exercise selection
3. **VR Execution** – Immersive workouts with motion tracking & feedback

Logical Breakdown:
- AI tailors exercises, VR boosts engagement, motion tracking ensures accuracy.

Key Challenges & Solutions:
- **Engagement** – Gamified workouts
- **Tracking Accuracy** – Optimized OpenCV & MediaPipe
- **Personalization** – AI adapts in real-time

USPs & Features

Unique Selling Points (USPs):

What makes the solution special?

- AI-powered personalized physiotherapy & fitness in VR
- Real-time motion tracking for accurate posture correction
- Gamified workouts for better engagement

How does it outperform alternatives?

- More interactive than traditional physiotherapy
- AI-driven customization vs. generic rehab programs
- Instant feedback & correction unlike standard video-based workouts

Key Features:

1. AI-Powered Exercise Recommendations
2. Real-Time Motion Tracking
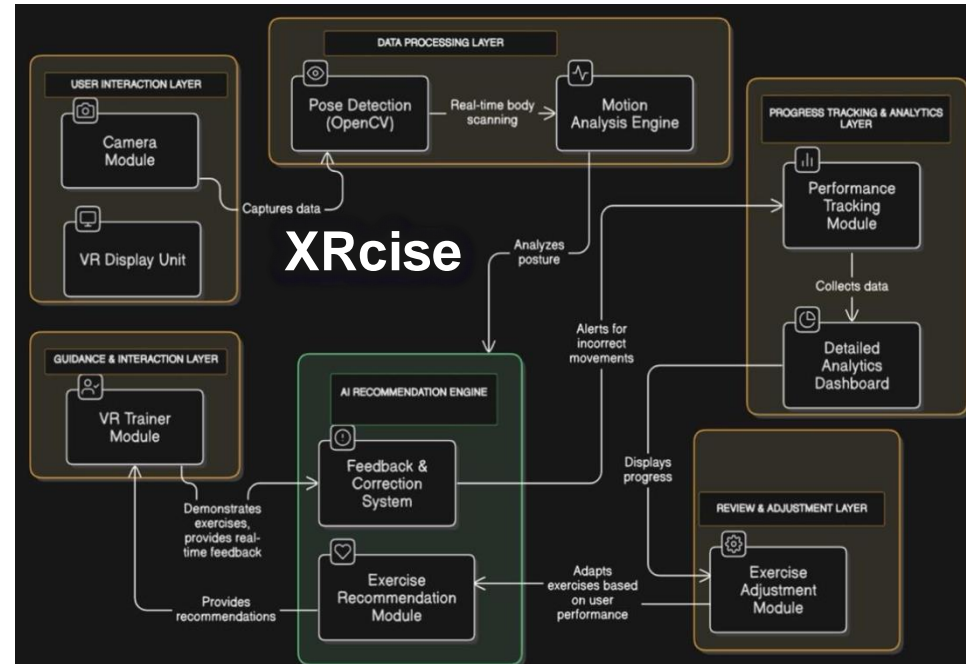3. Gamified VR Workouts

e6data

Technologies & Implementation

Tech Stack:

Programming Languages: Python, C#
Frameworks: Unity, OpenCV, Mediapipe
Databases: MongoDB
Hardware: Meta Quest (VR)

Implementation Methodology:

Potential Impact

Impact on Target Audience

Benefits: Improved physiotherapy & fitness with real-time correction
Social: Accessible, engaging rehab & active lifestyle promotion
Economic: Cuts healthcare costs, reduces therapy dependence
Environmental: Less travel, home-based recovery reduces emissions

References & Additional Links

Reference Research Papers and News Links

https://arxiv.org/abs/2411.12542
https://www.jmir.org/2025/1/e66802/
https://medicalxpress.com/news/2025-02-combined-traditional-physiotherapy-virtual-reality.html

Team Details

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