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Profile Overview

Theme - Healthcare

Problem Statement Title - Enhancing Gym Awareness and Personalized Nutrition Planning Using AI-Powered Solutions.

Team ID - (As per Unstop registration)

Team Name - HackBuster

Idea Title

AI-Powered Multi-Agent Ecosystem for Elderly Wellness & Fitness

Solution Overview: AI agents work together using wearable + smartphone data to detect health issues, track behavior, suggest workouts/meals, and keep caregivers informed.

Problem-Solving: Detects emergencies, improves routine management, and promotes emotional and physical health with AI-powered support.

Innovation: Includes mood-based suggestions, AI meal analysis, AR body scans, fitness-age tracking, and a gamified social fitness system.

Technical Approach
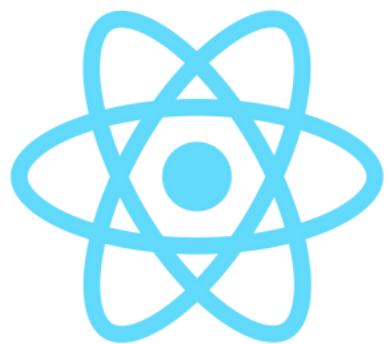
Technologies Used: Python, JavaScript, HTML, CSS, TensorFlow, OpenCV, React.js, MongoDB, Wearables (e.g., Mi Band, Fitbit), Smartphone (AR & camera)

Methodology: Collect data → Analyze with AI agents → Trigger alerts/reminders → Suggest workouts/meals → Share updates with caregivers

Process Flow: Sensors → AI Processing → Action (Alert/Reminder/Recommendation)

Feasibility & Viability

Feasibility: The solution uses proven technologies like AI, wearables, and smartphone sensors. Integration of cloud databases ensures remote monitoring and scalability.

Challenges & Risks:

- Handling sensitive health and personal data may raise privacy concerns.
- Varying capabilities across smartphones and wearables may lead to inconsistent performance.
- Elderly individuals may find it difficult to adapt to new technologies.
- Real-time monitoring and alerts rely heavily on stable internet.

Mitigation Strategies:

- End-to-end encryption for all health data and personal information.
- Build a modular system with graceful degradation – essential features work on all devices, advanced features scale up with capability.
- Design an elderly-friendly UI: large icons, clean layout, minimal options.
- Implement offline functionality for logging activities and reminders.

Impacts and Benefits

Target Audience Impact: Elderly individuals gain independence and safety; caregivers and families receive real-time updates and peace of mind.

Key Benefits

- Health monitoring and emergency response.
- Personalized fitness and nutrition plans.
- Emotional well-being via mood tracking and social features.
- Reduced hospital visits and healthcare costs.
- Early detection of unusual behavior or health risks.
- Simplified daily routine with voice-based reminders for medication, meals, and appointments.

Long-Term Value

- Scalable to support millions of users.
- Can be expanded with future AI upgrades.
- Supports preventive healthcare and aging-in-place goals.
- Can be integrated with hospitals, elder care homes, and personal care systems.
- Reduces chronic illness development through early warnings and smart planning.
- Helps healthcare providers create more personalized treatment plans over time.

HackBuster

References

- **WHO –** https://www.who.int/news-room/fact-sheets/detail/ageing-and-health

- **TensorFlow Documentation –** https://www.tensorflow.org

- **OpenCV GitHub –** https://github.com/opencv/opencv

- **Mood Detection via HRV –** //www.frontiersin.org/articles/10.3389/fpsyg.2021.713232/full

- **Fitness Age Study –** https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7871504/

- **Meal Recognition Research –** https://arxiv.org/abs/1902.00204