Global Talent

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PROJECT PROPOSAL

Wearable Dementia Patient Monitoring System with Mobile App

By Team Inception

● Field & Category

Field: **Healthcare** (specifically, geriatric care and dementia management)

Category: **Mobile health (mHealth)** - This refers to the use of mobile devices like smartphones and tablets to deliver healthcare services and information.

● Problem Statement

Sri Lanka has a growing elderly population, with a significant portion at risk of dementia and Alzheimer's. Traditional care methods can be challenging, especially for forgetful individuals. This often leads to missed medications, unhealthy eating habits, and wandering risks.

This project aims to address these concerns by developing a mobile application specifically designed for elderly Sri Lankans (aged 65-90+). The app will integrate with wearable technology to provide a comprehensive care solution.

● Solution Overview

This project aims to develop a "DementiaCare" mobile application designed specifically for elderly Sri Lankans (aged 65-90+) with dementia, Alzheimer's, or general memory decline

● Technical Details

Mobile App (Flutter):

- **Features:**
    - Medication reminders:
        - Customizable alerts (time, dosage, medication image, audio reminders)
        - Medication history tracking
        - Integration with pill organizers (optional)
    - Meal reminders:
        - Customizable alerts (time, meal type, optional picture of meal)
        - Option to create personalized meal schedules
    - GPS tracking:
        - Real-time location monitoring with a user-friendly map interface
        - Emergency alert button for sending alerts to designated contacts
        - Location history for caregivers to track past movements
    - User Interface:
        - Large fonts and high-contrast themes for better visibility
        - Simple and intuitive layout for easy navigation
        - Voice assistant integration for hands-free interaction (optional)
    - Caregiver Connection:

- Secure login for authorized caregivers
- Real-time updates on medication adherence, meal intake, and location
- Two-way communication features (calls, messages)
  - Multilingual support: Sinhala and English (other languages can be added)

Technology Stack:

- **Development Framework:** Flutter (for cross-platform development on Android and iOS)
- **Backend:** Firebase
  - Realtime Database for storing user data, preferences, and health information
  - Cloud Functions for triggering alerts and notifications
  - Cloud Storage for storing medication images (optional)
- **Maps API:** Google Maps or a local Sri Lankan alternative (if available)

● Project Dependencies

Software:

- Flutter SDK
- Firebase tools (CLI, extensions)
- Design tools (e.g., Figma, Adobe XD)

Hardware:

- Android and/or iOS development devices for testing
- Commercially available smartwatches or wristbands (optional) for integration

● Goals & Aims of the project

The main goal of this project is to develop a user-friendly mobile application, called DementiaCare, specifically designed for elderly Sri Lankans (aged 65-90+) with dementia, Alzheimer's, or general memory decline. DementiaCare aims to improve the lives of both the elderly and their caregivers through a variety of features.

Firstly, DementiaCare will enhance medication adherence by providing customizable medication reminders with alerts that include time, dosage, and even a picture of the medication itself. Additionally, the app can integrate with smartwatches for a convenient confirmation system, allowing users to easily mark their medication as taken (optional).

Secondly, DementiaCare will promote healthy eating habits by offering customizable meal reminders with alerts specifying the time and type of meal.

Thirdly, DementiaCare prioritizes safety and security by implementing a GPS tracking system that can locate users and provide emergency alerts in case of need. The app also fosters communication by allowing two-way communication with caregivers through calls and messages.

Fourthly, DementiaCare promotes independent living for the elderly with a user-friendly interface featuring large fonts, clear icons, and easy-to-understand instructions available in both Sinhala and English. To further support independent living, the app can offer an optional offline mode for basic functionalities like medication reminders.

Finally, DementiaCare empowers caregivers by providing them with real-time updates on their loved one's medication adherence, location, and overall well-being. The app also facilitates communication by offering a dedicated channel for easy interaction with the user.

● Potential impact of the project

DementiaCare has the potential to significantly improve the lives of elderly Sri Lankans with dementia, Alzheimer's, and age-related memory decline, along with their caregivers. By promoting improved health outcomes and increased safety, DementiaCare can empower both users and caregivers.

For improved health, DementiaCare offers customizable medication reminders with pictures and optional smartwatch integration, leading to better medication adherence and overall health management. Meal reminders can also ensure timely and appropriate meals, contributing to user well-being.

DementiaCare prioritizes safety and security with real-time GPS tracking, providing peace of mind for caregivers and helping locate users who wander. Emergency alerts allow users to easily send for help, enabling faster intervention in critical situations.

DementiaCare empowers caregivers by offering real-time updates on medication adherence, location, and potentially integrating with healthcare providers in the future. The app facilitates two-way communication through calls and messages, reducing caregiver stress and anxiety.

Supporting independent living, DementiaCare features a user-friendly interface with large fonts, clear icons, and Sinhala/English support. Additionally, offline functionality ensures basic features like medication reminders work even without an internet connection.

The social impact of DementiaCare is significant. It can help Sri Lanka address the growing need for dementia care in its aging population, potentially reduce healthcare costs associated with missed medications and complications. Furthermore, DementiaCare empowers families to care for loved ones at home for longer, promoting social inclusion and well-being.

● Features of your project.

Medication Reminders: The app sets up timed reminders for medication intake, ensuring patients don't miss doses.
Meal Reminders: Similar to medication reminders, the app can prompt users for mealtimes, promoting a healthy routine.

GPS Tracking: An integrated GPS system allows caregivers to locate the user's whereabouts in case of wandering or emergencies. This feature should be accompanied by clear communication on privacy settings with users and caregivers.

Sinhala Language Support: The app interface and reminders should be available in Sinhala for ease of use by the target demographic.

Simplicity: The user interface needs to be clear, uncluttered, and with large icons for easy navigation by users with potential vision limitations.

Team Details

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