Problem Brief

Alzheimer's disease is the most common type of dementia, an overall term for conditions that occur when the brain no longer functions properly. In India, more than 4 million people have some form of dementia. Worldwide, at least 44 million people are living with dementia, making the disease a global health crisis that must be addressed.

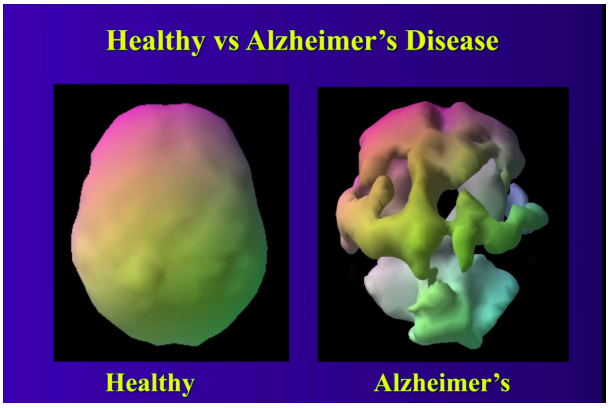
A diagnosis of Alzheimer's is life-changing for the person with the disease, as well as their family and friends, but with proper rehabilitation and support the degeneration of brain can be slowed down and possibly reversed and healed.

Proposal Brief

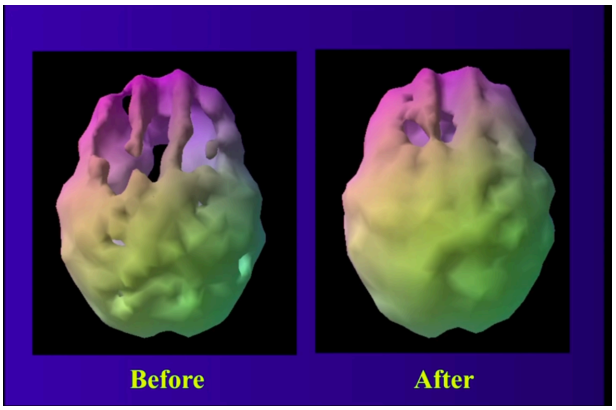
In our app, we aim to **detect Alzheimer's** at its **early stages** using ***games and pet scan image & data processing*** and post identification replicate the results of the ***brain rehabilitation program*** which is proven to help patients by **slowing down the degeneration** and **healing** their brain using the neuroplasticity of the brain.

The full suite will contain an **Android App and WebApp dashboard** with the separate **patient and caretaker logins**.
The app will not only contain **accessibility features** for the **safety and well-being** of the patient but it will also implement a *brain rehabilitation program* **tailored for the individual patient**.
The WebApp dashboard is to be used by the doctor/caretaker to track the improvements or degradation in brain activity as an effect of the rehabilitation program and **data collected would be used in research.**

Healthy v/s Alzheimer's Patient Brain Scan



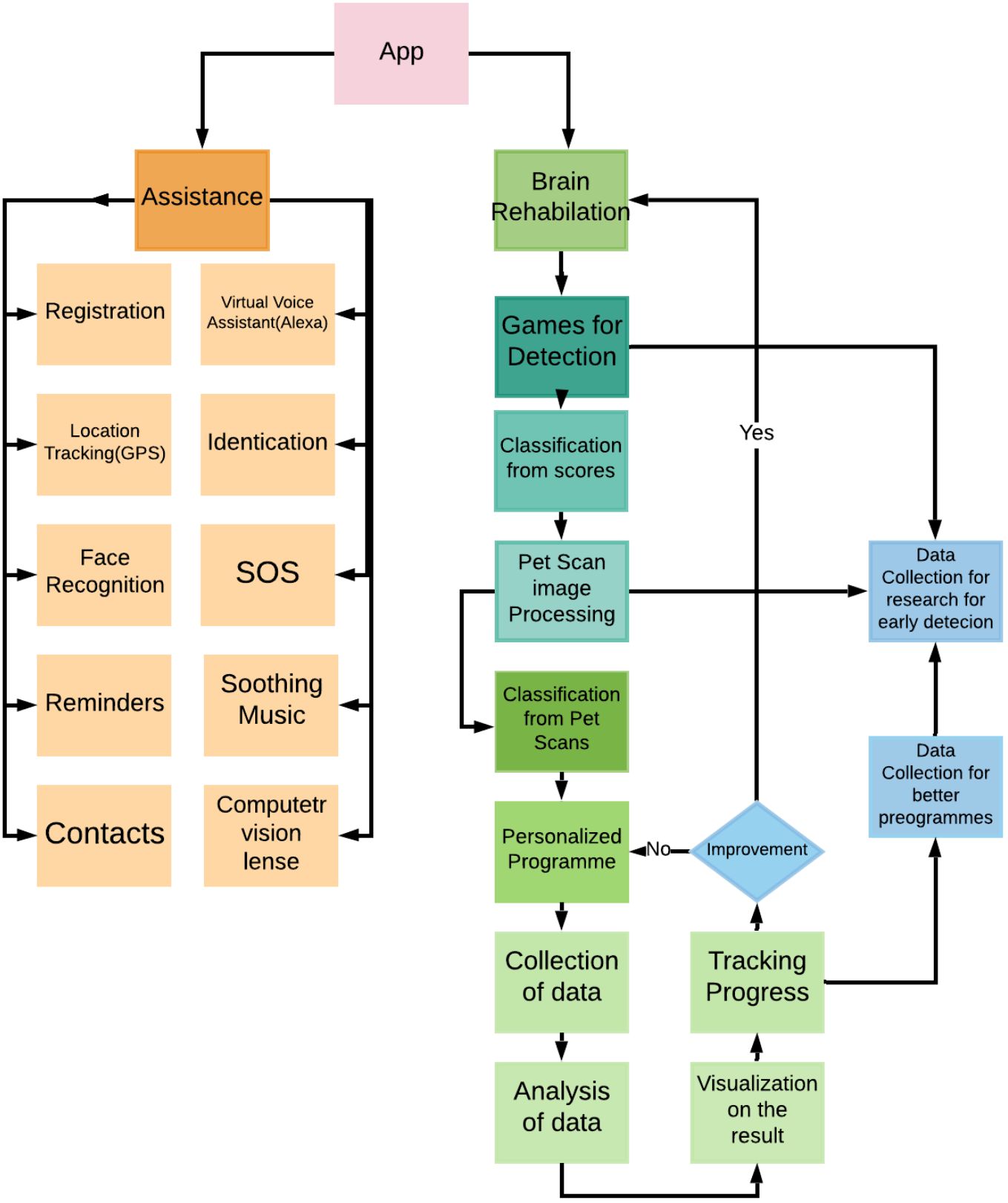
Before and After a Brain Rehabilitation Program



Tech Stack

Flutter, Dart, Python, Deep Learning, Machine Learning, Data Analytics, Data Visualization, Pandas, Matplotlib, Unity, C#, Node.js, JavaScript, AR/VR, Wearable Tech, HTML, CSS, Bootstrap, JavaScript, Firebase, smart home tech.

App


App
Assistance
Registration
Virtual Voice Assistant(Alexa)
Location Tracking(GPS)
Identication
Face Recognition
SOS
Reminders
Soothing Music
Contacts
Computetr vision lense
Brain Rehabilation
Games for Detection
Classification from scores
Pet Scan image Processing
Classification from Pet Scans
Personalized Programme
No
Improvement
Yes
Collection of data
Analysis of data
Tracking Progress
Visualization on the result
Data Collection for research for early detecion
Data Collection for better preogrammes

Tech Stack

Web Dashboard
HTML, CSS, Bootstrap, Javascript, Python, Django
Virtual Assistant
Azure Web Services, Node.js
Android Application
Java, Android Studio, Flutter, Dart, Firebase

Features - App

Identification
Using this feature the patient can point his phone's camera to anyone's face and know that person's name and relation with the patient. If the person is not in records and it's some new acquaintance then that person can be added in the record along with the relationship that he has with the patient by the caretaker.

Medicine and appointment reminders
Android app will have timely reminders for medicines and appointments. This data will be fed by the caretaker.

GPS Tracker
Dementia and Alzheimer's patients due to their weak memory may get lost sometimes so using GPS they can be easily tracked down and the caretaker will get timely updates of patient's location

SOS
For emergency situations.

Soothing Music
The patients are often known to be confused and irritated even by small things. Music is one approach that soothes one's mind and calms them. The application will have a list of mood changing songs that can help relax their minds.

Virtual Assistant
A virtual assistant will be integrated into the app for better assistance to the patient. Keeping in mind that the patients could also be old people, the interface would be relatively easy to use and simple to understand.

WebApp Dashboard
The dashboard will provide an overview of the patient's activity over a period of time. The reports generated here can be used to track the progress of the disease and the effectiveness of the brain habilitation program.

Memory games :

To help the patient remember things like names of the family member, relation with them and a lot of other things. There are some games which challenge the patient's memory and these simulate their brain and help them retain information for a longer duration. There'll be some puzzles and some other challenging games for the patient which can be chosen by the caregiver or the doctor. Some games might help some patients but some might not, so the performance in these games will be used to analyse what type of activity that should be chosen for the patient.

How are you feeling today?
To record moods(happy, sad, angry etc) of patients every day which will later help in diagnosis.

Tech Stack

Web Dashboard
HTML, CSS, Bootstrap, Javascript, Python, Django

Virtual Assistant
Azure Web Services, Node.js

Android Application
Java, Android Studio, Flutter, Dart, Firebase

Future Scope

The application will be linked with a digital watch that can track the location, send SOS and also measure the pulse of the patient. In case of drastic change in pulse, an alert will be sent to the caretaker.