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Mobile Health Application for Alzheimer's Diseased Patient and Caregivers

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ABSTRACT: Alzheimer's, is a common form of dementia which is currently the seventh leading cause of death among all diseases and one of the major causes of disability and dependency among the people worldwide. Currently there is no cure for Alzheimer's. However the progression of the disease can be slowed down by improving patients quality of life. Nowadays everyone uses the mobile so it can be a possible solution. Caregivers of alzaimers can use mobile phones to improve the patients daily routine by giving time to time notification to patients. Getting the patient's live location after some specific period of time in Background. Furthermore, the social media section can be used as a memory recaller to patients and by providing the latest news on alzaimers which will help caregivers to uptodate. A health chatbot will provide the every need of caregivers on a single Click. Due to which mobile will change the Alzheimer's impact on patients. All these functionalities motivate to build a simple native application with an interactive interface which will help the caregivers and patients.

KEYWORDS: Alzheimer, Location Tracking, Mobile Health, Assisting Technology, Memory Recaller.

I. INTRODUCTION

In an era where Alzheimer's is increasing in adults, Alzheimer caregivers are searching for new and better solutions to overcome the same. One of the solutions for this is the use of mobile devices to help Alzheimer patients. Today's research has shown that the use of computer assisted games which includes brain, memory, and solving problems help Alzheimer patients to stimulate their brain and also helps in reducing Alzheimer's Disease symptoms. One of the day care facilities (in Spain), the use of the computer games, improved the reasoning power of Alzheimer's Disease patients. Researchers in a recent study found that when regular treatment is mixed with computer assisted toolkits which includes games as well as daily activity monitoring shows great improvement in Alzheimer's Disease patients [1][2].

Therapy which includes brain games and stimulation (computer-based) are helping professionals such as healthcare, caregivers and also to Alzheimer's Disease patients. New arcade for professionals working as caregivers, software developers, mobile application developers has been created due to the increasing use of the internet by our older people. In the starting age of mobile devices older people hesitate to use them due to complex GUI's..[1][10]

Our application aims for making a mobile application which is user friendly and easy to use by older people and patients of Alzheimer's disease. Our project's main motto is to keep caregivers uptodate through mobile which can help in enhancing the cognitive abilities of Alzheimer patients[10]. Our project aims at caregiving automation i.e. we have enabled a live location tracking system in our application which is able to fetch the users live location in poor connectivity areas also. It enables users to read all live news regarding Alzheimer's disease worldwide. It allows caregivers to send urgent notices to patients. Our application also contains the Chatbot which can be used to get any details by a caregiver over the internet on a click.The scope of our project is very broad in terms of other Alzheimer's caregiver applications.[6]

II. RELATED WORK

Nowadays Alzaimers are increasing very rapidly, therefore caregivers are trying to find a new solution to mediate this crisis. New research has proved that the use of brain memory to solve tasks with some help reduces the symptoms of Alzheimer's patients as well as reduces the financial and physical burden on caregivers. We have researched a lot and have come to the point that every existing application is one of the same in almost all applications.



Some applications possess features like health management, health trackers, contacts, calendar. Some contain safety features which generate alerts to caregivers as the Alzheimer's patients go far from home. Some applications focus on the needs of caregivers which helps them to handle Alzheimer's patients, some provide the free resources and training to caregivers.

All of the above features mentioned in the above section are so helpful but the drawback is that these all features are in different applications which also do not include the simple and interacting Graphical interface to the user. Due to which it is very time and energy consuming for caregivers and patients.

III. PROPOSED SYSTEM

The Alzhimers application is designed for helping the caregivers by providing a proper knowledge of Alzheimer disease. Our new system is helpful to caregivers by providing time to time notification which is time efficiency, with a goal of minimum expenditure .

- Adding Users.
- Sending notices to patients .
- Chatboard for instant help.
- Keeping the caregiver up to date we have provided a News Section.
- To Recall Memory patients can add photos.
- To track patients' live location with GPS .
- Keeping patient care as the utmost priority.
- Keeping information on medicines available to care for patients.

IV. PSEUDO CODE

The steps a user goes through while using the application are :

Step 1: Start.

Step 2: User(Caregiver) creates an account by providing email id.

Step 3: Log in with a credential and if the right user gets access to the application.

Step 4: After getting access,caregiver full detail will be shown in the profile section of the application

Step 5: In the profile section the caregiver can add as many patients as he requires.

Step 6: After adding a patient caregiver can access the patient's live location.

Step 7: Also users can send notification through chatting to the patient.

Step 8: The user can log out.

Step 9: Stop

V. DATA FLOW DIAGRAM

A data flow diagram (DFD) is a graphical representation of the flow of data through an information system, modeling its process aspects.A DFD is often used as a preliminary step to create an overview of the system , which can later be elaborated. DFDs can also be used for the visualization of data processing (structured design) A DFD shows what kind of information will be input to and output from the system ,where the data will come from and go to,and where the data will be stored. DFD level 0 describes only one process node that represents the function of the entire Alzheimer Diseased Patients and Caregivers Management System. Represented functions are Login / Registration, Edit Update profile,

Figure 5.1 shows the level 0 DFD

Visual Paradigm Online Free Edition



Level-0 DFD

Visual Paradigm Online Free Edition

Figure 5.1. Level 0 DFD



VI. SYSTEM ARCHITECTURE

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. it can consist of system components and the subsystems developed that will work together to implement the overall system. There have been efforts to formalize languages to describe system architecture, collectively these are called architecture description languages (ADLs) Various organizations can define systems architecture in different ways, including: The fundamental organization of a system, embodied in its components, their relationships to each other and to the environment, and the principles governing its design and evolution. One can think of system architecture as a set of representations of an existing (or future) system. These representations initially describe a general, high-level functional organization, and are progressively refined to more detailed and concrete description.

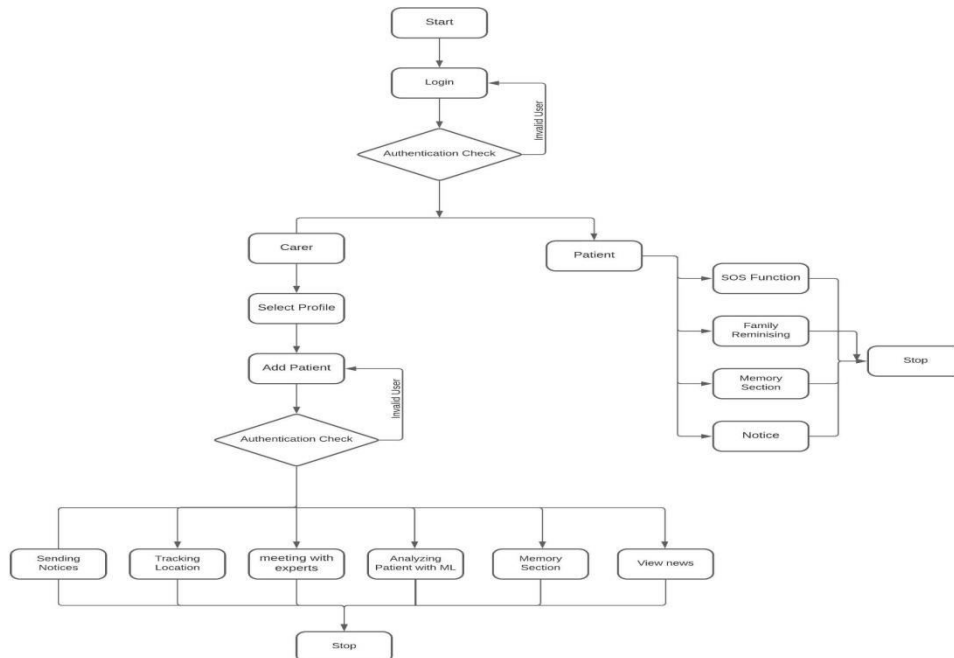
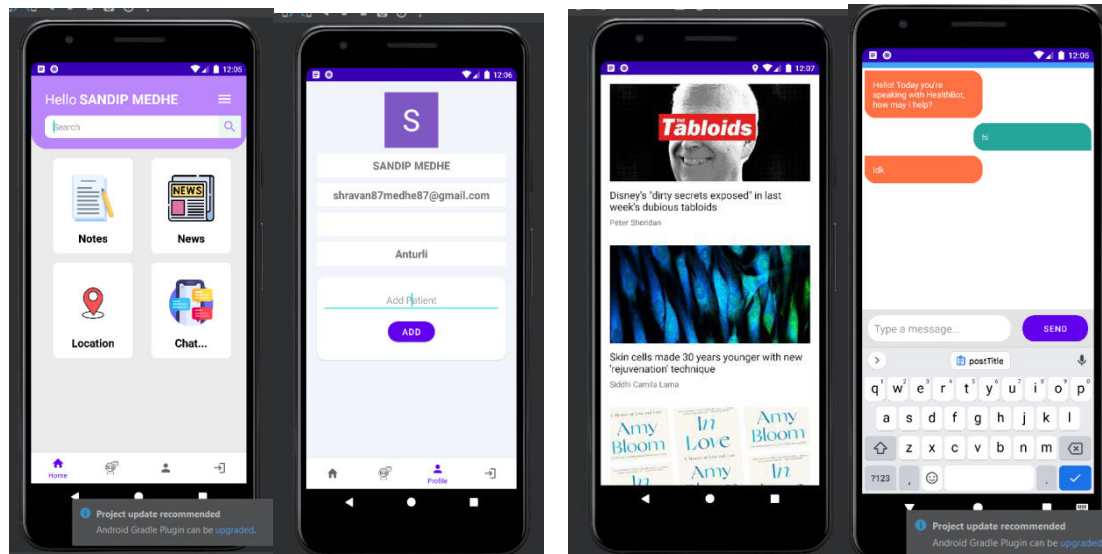


Figure 6.1. System Architecture

VII. RESULT

Result is a thing that is caused or produced by something else and called as the consequences and outcomes. Discussion is the action or process of talking about something to reach a decision or to exchange ideas. Results The application first takes the user to the login UI and asks for the mobile no which is unique for a user(Admin) and authorized by the one time password.After Login the user will be able to use all the functionalities which are shown below. Our application also successfully updates the data. The difficulty occurs when managing the huge amount of data of patients with Alzheimer's.



VIII. CONCLUSION AND FUTURE WORK

Family caregivers are integral to the quality of life of people with dementia. The high levels of burden and psychological morbidity are well documented, as are factors that predict which caregivers are vulnerable to these. Interventions can ameliorate these effects and thereby improve the quality of the life of people with dementia. The management of the person with dementia requires a comprehensive plan that includes a partnership between doctors, health care workers, and families. Caregivers susceptible to negative effects can be identified and could be targeted for interventions. Severity of psychiatric symptoms and behavioral disturbances and patients' quality of life have stronger association with caregiver perception of burden than cognitive functioning and functional skills. Combinations of pharmacological and behavioral and family interventions targeting these two aspects of the disorder are likely to not only alleviate patient suffering but also mediate improved caregiver well-being and may also delay nursing home placement thus reducing both direct and indirect costs of care.

In future work, we will focus on improving and increasing the feasibility and practicality of the proposed protocol.

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