

AlzHelper: An Ubiquitous Application to Assist Alzheimer's Patients

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Abstract

In the past few years, there has been a significant advancement in smartphone technologies, especially android systems. Many innovative applications have been developed that are used in the health-care domain. We have a similar aim when developing this application, it intends to facilitate doctors' tasks by using a ubiquitous information system. To achieve this, our application is based on the open source operating system, Android, and web service technologies. As this increases in levels of flexibility and popularity, we aim to develop an application that acts as a tool for advancement in the industry. There are two applications, one each for patient and caretaker. These applications are connected through and communicate using the server.

Keywords: Android, Alzheimer's Disease, M-health, Services, Ubiquitous System

I. INTRODUCTION

Alzheimer's disease is a chronic neural disorder that impairs cognitive functions. The effects of this disease usually intensify over time and worsen the decision making capabilities of the patient. It also affects memory and results in acute memory losses. Though we cannot provide a cure, but we have developed an app that could assist early onset patients. This application aims to assist both caretaker as well as the patient by providing them various kinds of important notifications. The ultimate goal of this app is to provide patient's locations as well as routine activities to the caretaker and patient, also help the patient reach home safely, in case of an emergency.

AlzHelper application system is composed of users, front-end, middleware and back-end. It is a m-health application for distributed pervasive i.e. ubiquitous system. This application can be considered useful for both the patient and caretaker. Both users can operate handheld devices and can fill information using webforms. The data is further stored in the database. RDBMS is used, that stores data in a sequential manner. Clients can access data on demand. The data from the tables can be fetched using SQL queries. The application requires a working internet connection to function.

Though our primary focus is to provide assistance to Alzheimer's patients, this application can be tweaked to function in multiple ways. It can be used a good tracking mechanism ensuring child safety, safety app for women and also for tracking felons.

II. MOTIVATION

Alzheimer's disease patients need to be monitored round the clock. It may become a cumbersome process. There was a need to build a system that could provide easement to the task. This application is a medium for the caretaker to monitor the patient and still go on about with day to day activities. It also encourages mobility of the patient without restricting their freedom and the fear of getting lost. The early-onset patients can benefit from the features the app provides.

III. APPLICATION SUMMARY

This Android application and supporting system will assist Alzheimer's disease patients by acting as a notifying medium. This system will also minimize the caretaker's overhead by providing hourly updates of patient. The application has many applications in day-to-day life such as,

- 1) Provides memory backup to the patient, so that he/she is able to recall their personal information and history.
- 2) With the help of this application, caretaker and patient both will able to receive same information using their username and unique password.
- 3) Application acts as communication bridge between caretaker and patient.
- 4) Shows personal details to the patient, as patient suffers acute memory loss due to the disease.
- 5) Shows notification about Medication timings, Doctor Appointments, Current location etc.

- 6) Sends the patient's location to the caretaker every twenty minutes and sounds an alarm if three consecutive notifications are ignored (uses the blue tick feature same as WhatsApp)
- 7) In case of sudden memory loss, it provides patient's current location's notification to patient as well as caretaker in the form of pop ups and alarms.

IV. APPLICATION SCREENSHOTS

A. Patient App

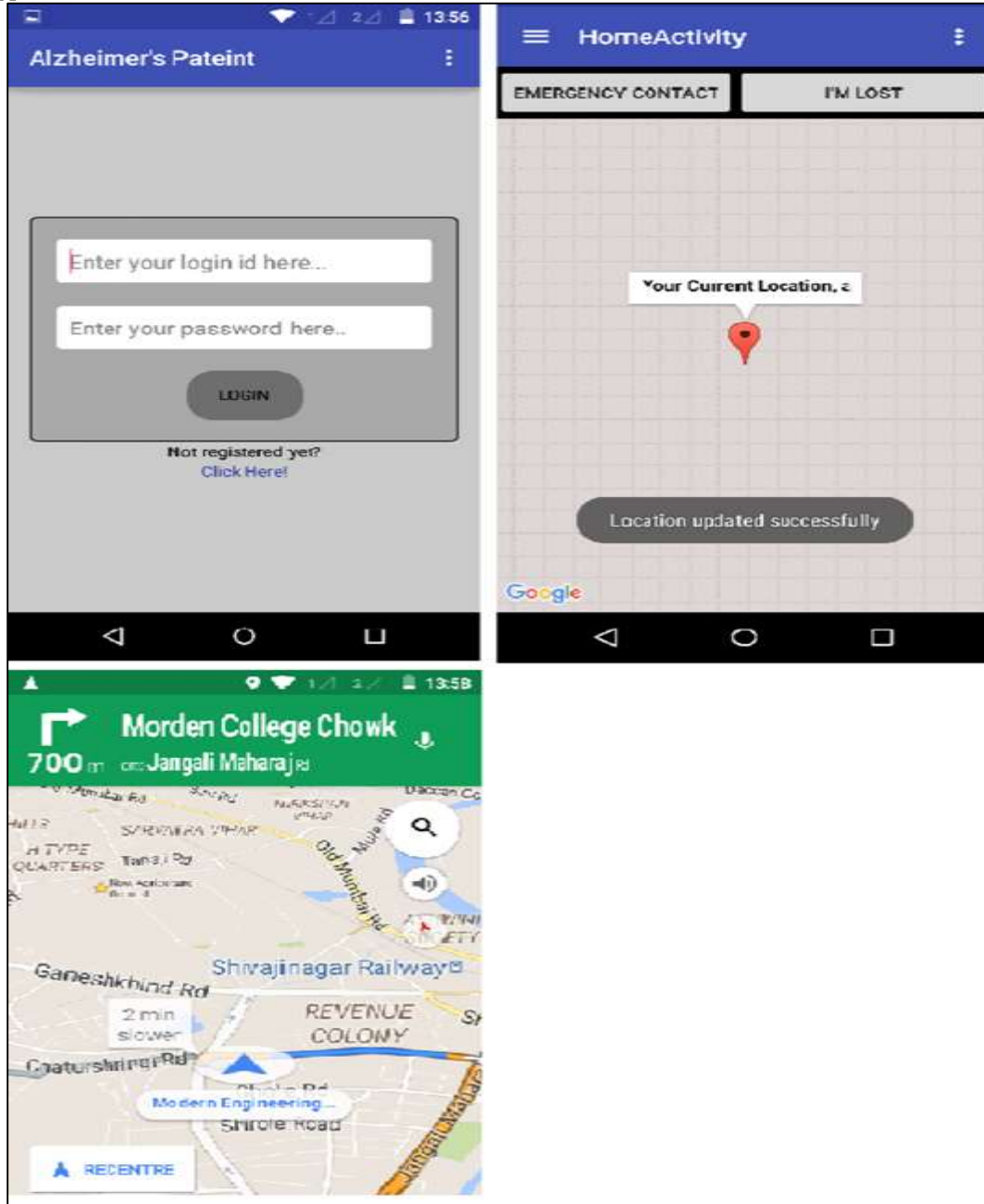


Fig .1: Patient App

B. Caretaker's Application

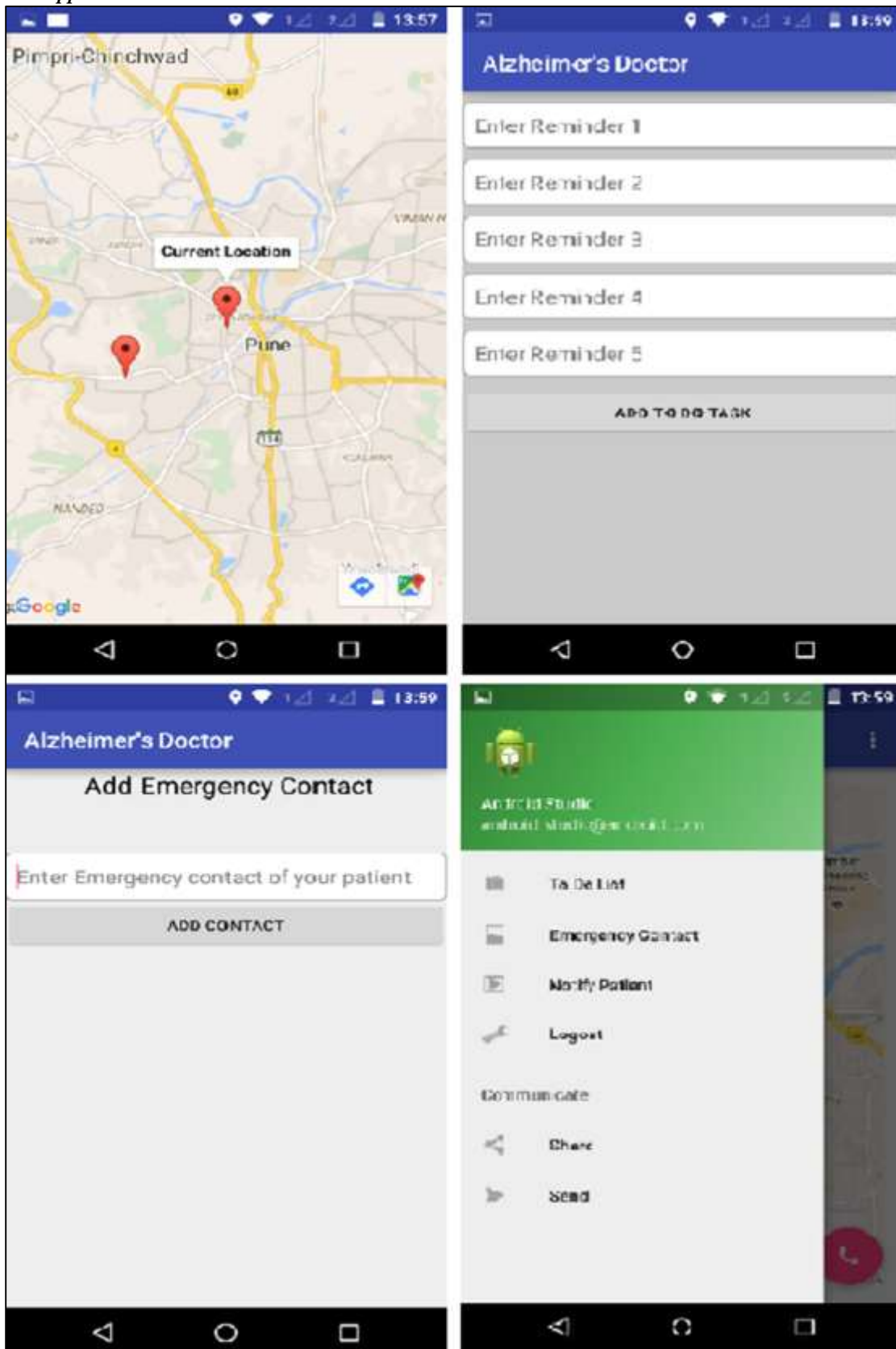


Fig. 2: Caretaker's Application

V. DESIGN CONSTRAINTS

A. Client function

Client function contains patient and caretaker in which both users can operate handheld device or can fill information using web forms. The data is further sent to the server to be stored in the database.

B. Server function

Drives are generally used to store the input data which is obtained from users. It also processes the data but for that we require internet connection and excellent front-end to back-end design.

C. Database Function

Database is the main storage space of the whole system. One can store data into database using programmable queries and SQLite back-end. For this application we are using RDBMS i.e. relational database management system in which data gets stored in a sequential manner.

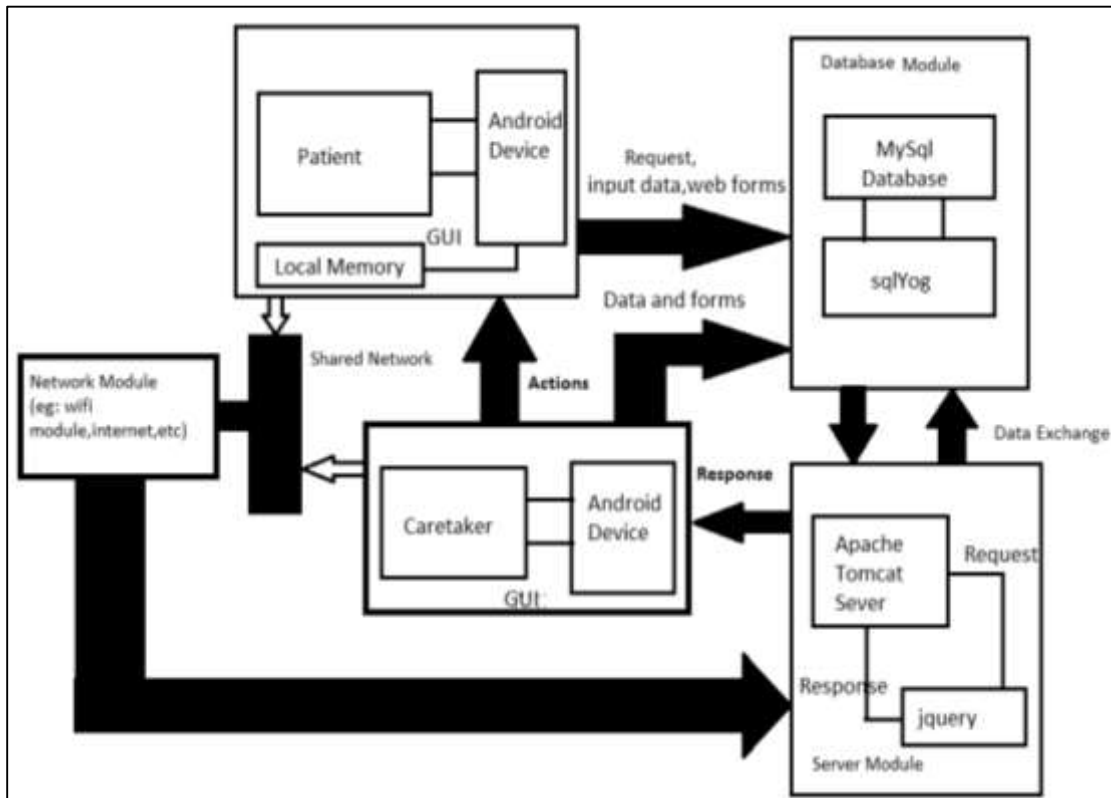


Fig. 3: Block diagram of AlzHelper system

D. Mysql Database:

MySQL is a database management tool. It is used widely owing to the ease of use and the software being an open source one.

E. Android Studio:

Android studio is one of the most flexible tools available. It provides tools to develop quality android applications with ease. It also offers the android SDK.

VI. CONCLUSION

By using AlzHelper, we believe that we can satisfy major requirements including caretaker's, patients' needs. More precisely, the application deals with the growing demand by providing information anytime and anywhere by facilitating the communications and collaborations between the users of the application. It acts as a system capable of ensuring ease and availability, anytime and anywhere.

ACKNOWLEDGEMENTS

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