

# Med-Tracker: Android app for medicine tracking

Shrutika Deokar

Dept. of Information Technology  
Pillai College of Engineering  
New Panvel, India

Sourabh Khandake

Dept. of Information Technology  
Pillai College of Engineering  
New Panvel, India

Shubham Ture

Dept. of Information Technology  
Pillai College of Engineering  
New Panvel, India

Deepti Lawand

Dept. of Information Technology  
Pillai College of Engineering  
New Panvel, India

**Abstract**—Medicine tracker is a local android application intended to help occupied or busy individuals with recalling their day by day prescriptions. It is intended for users who need a little assistance in keeping with following their drug plan. This application will allow users to store drug information and different cautions for those medications. Updates will happen once every day, except can likewise be set to happen on numerous occasions a day and week. Users can see the prescription as of now in stock and get an inexact date when the stocks will run out. Likewise, this framework utilizes NLP algorithms that can remove information from content utilizing profound learning systems. Plus, the application will likewise store the historical backdrop of meds taken. This will help the users just as specialists to monitor their medicine utilization. This application will furnish users with a choice to look for neighborhood facilities and restorative stores.

**Keywords**—Alarms, Medicine stock, NLP, Local Clinics, Medicinal stores.

## I. INTRODUCTION

Now a day's technological innovation is updating the way sufferers are receiving care services. Smartphones aren't best used for calling purposes but now may be used as an ensemble of embedded sensors that together allow new packages in widespread areas including healthcare, e-trade, homecare, healthcare, social networks, environmental tracking, transportation, and protection. Today in healthcare systems, the utilization of mobile devices is becoming an increasing number of users. As people are getting busier day by day, it's very natural to forget about the medications provided by the doctor and to remember taking them on time. By this application, we aim to make sure that people take their medications on time. This is especially helpful for the old people who have a natural tendency to forget normal things let alone medications prescribed for a certain time. To reduce the chance of missing these times this is our way to try to solve this problem.

## II. Literature Survey

**1. R. Sunder Reddy, C. Niharika, Rohit Sharma, Bharat Kumar, "An Intelligent Patient Medicine System Reminder", [1].**

This project help remind an individual to take medicine on time. They build a hardware device which consists of a matrix keypad to set the timing of alarm, a buzzer that reminds to take medicine, a Real Time Clock and an LCD to display the medication time. The hardware was user friendly but if the device gets damaged the complete medication history would be lost and nothing would be done to retrieve the lost data.

**2. Mayuresh Waykole, Vatsalya Prakash, Himanshu Singh, "ArduMed - Smart Medicine Reminder for Old People", [3].**

This project also helps in reminding the patient to take medicine on time. The user can access the reminder system in two ways firstly using the webpage and secondly with the help of mobile application. It serves reliable reminders, has a good and easy to use user interface and supports a lot of feature adhering to medicines. The system is not up on alarms so if the user skips the alarm, we don't bug him continuously.

**3. Akshay Pandey, Rahul Kumar, Vinay Yadav, "Smartphone based Medicine Intake reminder using GCM", [4].**

Using Android as a platform is very convenient as there are many android users. Google Cloud Messaging provides android users with push messages. They have used GSM so as the users get notified regarding their medication through GSM system. As the GSM provides with a message but if by chance the user forgets to check the message then the medication gets skipped from the daily routine as it does not force the users to take medicine.

**4. MD. Aby Sayeed Mondol, Ifat Afrin Emi, John Stankovic, "MedRem: An Interactive Medication Reminder and tracking system", [5].**

This paper presents MedRem, a novel medication reminder and tracking system on wearable wrist devices. The system is handy and interactive, and it is enriched with several useful features. The State-of-the-art speech recognition tools

are combined with novel approaches that make the system very usable and robust. If the data is not saved on daily basis it is hard for the patient to maintain the history/progress towards their medication.

### III. System Design

The application that we built starts with an intro slider that highlights the key features of the application, leading users to the login page via the last slide. After which the user will be asked to login via his/her google account. After logging into the app initiates three main services which further lead to other functions of the application.



Fig. 1. Proposed System

#### Login Services

Login service is the basic method or a way to get access to any application. Every user while logging into an application is provided with a unique ID and a password. The user ID is of fixed length basically consisting of eight characters and the password should consist of at least one digit followed with some characters and symbols.

#### OCR

The OCR acknowledges the text. First, the program analyzes the structure of the image. It separates the page into components, for example, squares of writings, tables, pictures, and so forth. The lines are isolated into words and afterward into characters. When the characters have been singled out, the program compares them with a set of pattern images [8].

#### Global Positioning System

The GPS is a satellite navigation system that gives precise information of location and time in all climatic conditions. The GPS serves with real-time 3-dimensional navigation, positioning, and timing worldwide. GPS is basically used for navigation in planes, cars, ships as they provide with the vehicle speed, direction and time.

#### Google Map API

The Google Map API returns with supportive information of the spot and area to the user. Basically, the Google Map API does two things: it allows the user to demand a location to

the google (user has to provide their current location) and then with the given input from the user the google map will return with the output.

#### Firestore

Firestore is a Backend-as-a-Service — BaaS. Firestore liberates designers to concentrate on making phenomenal users encounters. Users don't have to continuously keep an eye on servers. Users don't have to write or create APIs. Firestore is our server, API and our data store or database, all created so conventionally that we can alter it to suit most needs. Firestore permits users or clients to develop their mobile application according to their requirements by providing them multiple functionalities which are useful for their application. Firestore permits users with all types of authentication such as log in with google, login with Facebook etc. Firestore also provides users with a real-time database that allows them to debug their code and track the hits made by the user and all kinds of things at one single place which makes firestore very easy to understand for the developers.

### IV. IMPLEMENTATION DETAILS

#### GUI

This is the overall UI of the application. Users will interact with this part of the application only. Reminders – After the user logs into the application, he/she will have options to set reminders, manually input the available stocks, etc.

#### Create Activity ()

It is the first activity that will provoke the process of setting the reminder, which will have 2 ways of notifying the users. Either in Toasts or Dialog boxes. Toast is a small snappy view which contains a snappy message for the user. This message doesn't proceed since it is open for only two or three minutes taking everything into account. We won't use toast to remind the user. Rather, we utilize a toast to inform the user when the user's movement has been spared with the goal that the user realizes something occurred. The last not really famous technique to catch a user's eye is to open an exchange window which will immediately take center from the user's by and by running application and direct it to a discourse window. While this may undoubtedly fill in as a strategy for catching the user's eye, the user may get bothered since their application is taking center (potentially consistently if the user has a ton of updates) from his present activities in another application. We will utilize the Notification Manager class to deal with the cautions for the Task Reminder application.

#### Notification Manager

The notification manager does the work of notifying the user about the events taking place. The events are usually located at the top of the screen. The notification bar consists of various notifications that can be easily identified by their respective icons. The user has to slide down their notification bar to view further details. The basic implementation of the reminder needs to have these four basic things: Title, Body, Reminder Date, Reminder Time. The title is the name of the medicine or name of the remainder which contains a description of the medicine.

Once the user is done taking his respective medicine, he can just swipe left or right to turn off the reminder.

### Views

The views are an important element of the application, as various devices have different screen resolutions. Depending upon the screen resolution a scroll bar is provided so as it becomes easier for the user to scroll the content of the application when they are too big for the screen device.

### Extraction of text from Image using OCR

OCR (Optical Character Recognition) is an algorithm used to extract the text from the given image. Due to its beneficial feature it has become easier to store data directly from the text irrespective of the platform. OCR reduces the manual work by directly storing the data extracted from the prescription which saves the users time.

### Google Cloud Vision API

Google Cloud Vision API empowers engineers to comprehend the substance of a picture by exemplifying amazing machine learning models in a simple to utilize REST API. It rapidly characterizes pictures into a large number of classes, distinguishes singular articles and faces inside pictures, and finds and peruses printed words contained inside pictures. The instrument initially plays out a format investigation on the picture to section the area of the content. After the general area is distinguished, the OCR module at that point plays out a content acknowledgment investigation on the predefined area to create the content. At long last, mistakes are rectified at a post-handling bit by bit.

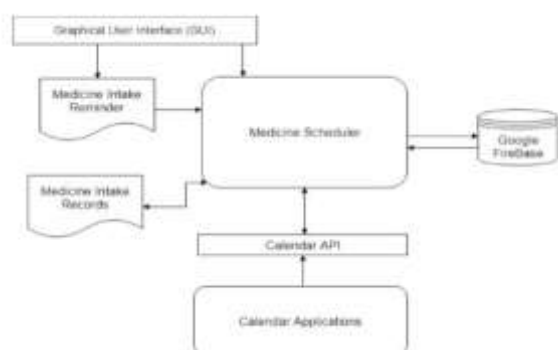


Fig. 2. System Functional Module

### Stock Reminder

This system has a stock reminder function that keeps track of the user's medicine stocks. This module allows users to keep a track of your product inventory & expiry date from the back-end panel. Users can manage inventory status & product expiry data by receiving timely updates on registered email or phone no. When the user's medicine course is about to complete, there will be notification provoked by the app to remind the user about the remaining stock of the medicine that has left. The count of the medicine will decrease as the user will take the medicine. If the user wants to continue the medicine as prescribed by the doctor, they can set the reminder according to their needs.

## V. PROJECT INPUT AND OUTPUT AND SCREENSHOTS

### Home UI

In our application, the input details consist of a user creating an account to login, add the number of medications prescribed by the doctor and scanning the prescription. Fig.

3. depicts the front end of the application. The front end consists of 5 tabs namely a search box, Scan your Prescription, Profile, Nearby, Stocks, and a Reminder.

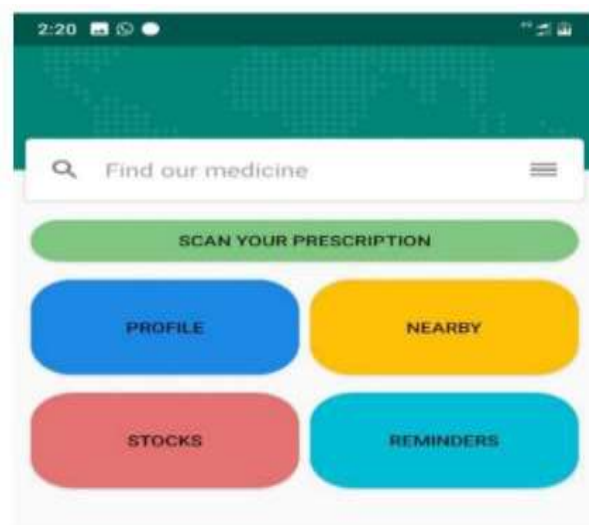


Fig. 3. Home UI

### Search Bar

The search bar is a UI part that is constrained by the Android framework. When enacted by the user, the search dialog appears at the topmost of the activity. The Android framework controls all occasions inside the search dialog. When the user submits an inquiry, the system delivers the query to the activity that you simply specify to handle searches. The search dialog also provides suggestions while the user types.

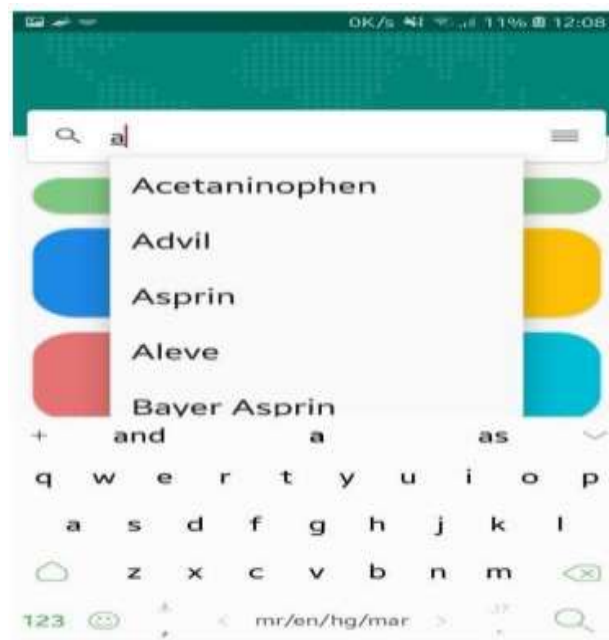


Fig. 4. Medicine Search Bar

### Scan your Prescription

The Text Recognition API perceives messages in any Latin-based language. Here the user can examine the medicine given to him by the specialist, which makes it simple for the user to bolster information as opposed to physically composing it.



Fig. 5. Prescription added Confirmation

### Profile

A personal profile is a visible show of private information associated with a unique user, or a custom-made laptop environment. Here in this application customers name, age, date of registration and a range of medications are stored.



Fig. 7. User Profile

### Nearby

This tab will show the close by medicinal store and clinic to the user. In the event that the user is on the move starting with one area then onto the next then this choice will help the user to find the close-by emergency clinics and Medical stores.



Fig. 6. Text Extraction



Fig.8. Nearby Hospital Location



### Stocks

The stock tab is of great help to the user, resulting in storing the number of medicine available and does remind the user when it is running out of stock.

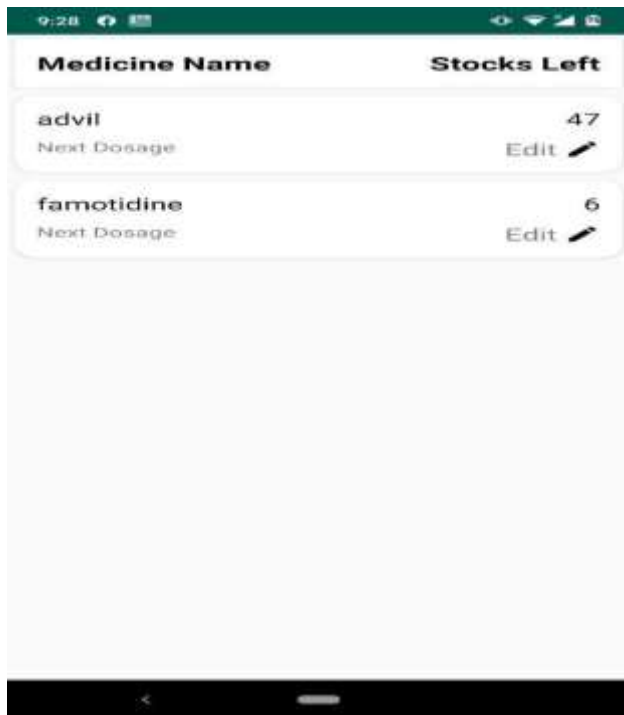


Fig. 9. Stock Reminder

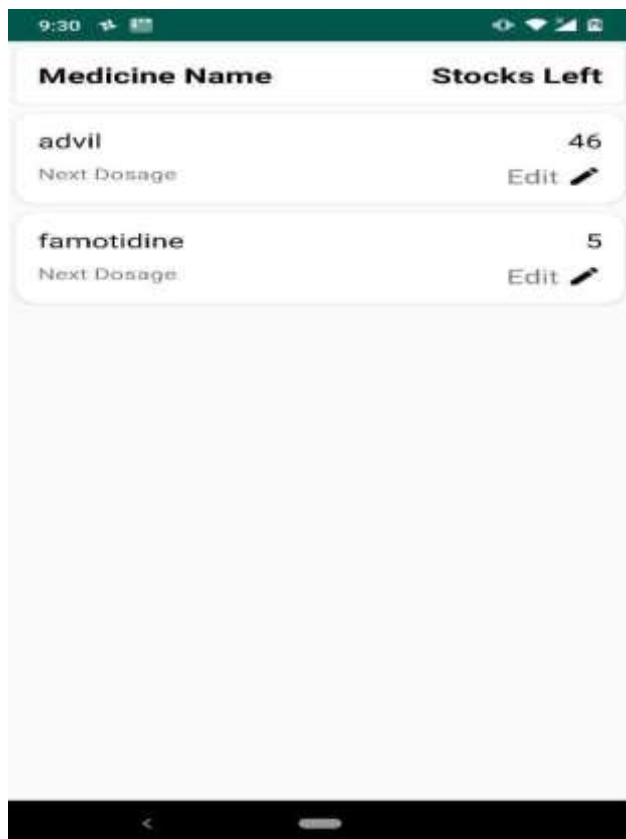


Fig.10. Stock Remaining

### Reminder

A reminder tab is valuable for the individuals who are very occupied with their work routine and furthermore accommodating for the senior residents who frequently neglect to take as much time as is needed. Reminder tab is essentially an alert framework that will ring as per the user's prescription time. The user needs to physically fill the medicine as endorsed by the doctor.



Fig. 11. Reminder Notification

### SOS Emergency

SOS Emergency: It is of great help when the user requires an urgent medical help. On clicking the SOS Emergency tab the user directly gets in contact with the nearby hospitals and clinics.

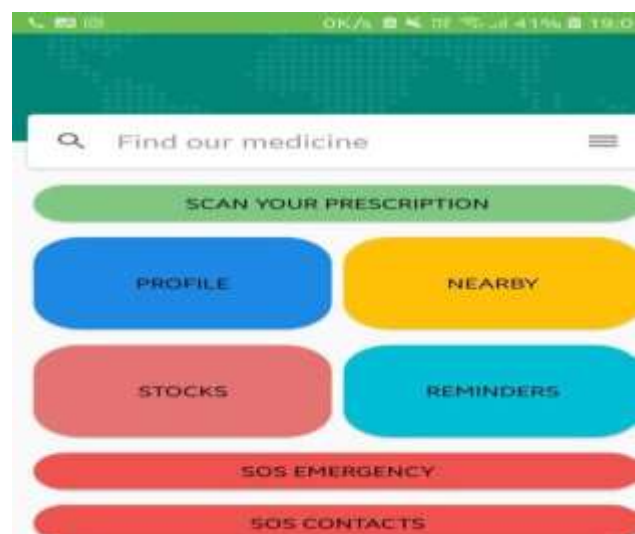


Fig. 12. SOS Emergency

notifies the other person of the user being in some emergency and requires urgent help.

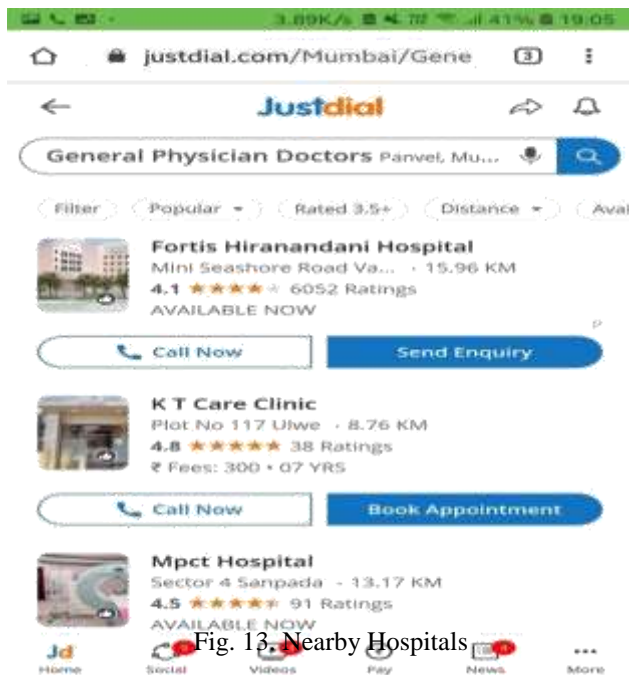


Fig. 13. Nearby Hospitals

### SOS Contact List

To use the SOS Contact tab the user first needs to store the contact of the person with whom he wants to contact during an emergency. The user can add N number of contacts he wants to add and if the user wishes to delete any of the stored contact the user can delete as per his needs.

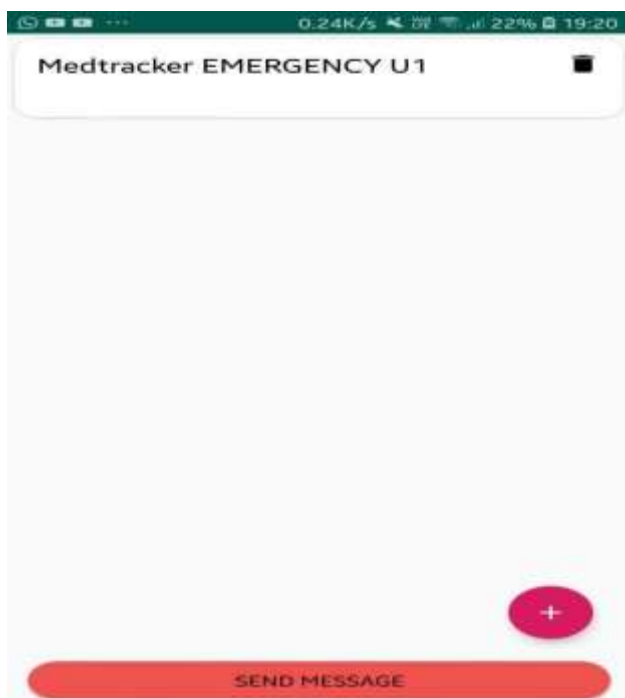


Fig. 14. Contact List

### SOS Message

On clicking the SOS Contact tab a text message “HELP ME” will be sent to the number of stored contact. This



Fig. 15. Emergency Messages

## VI. CONCLUSION

The Med-Tracker: Android app for medicine tracking is developed to remind the user to take medicine on time. This application stands apart from the other applications as it provides with a feature of scanning the prescription using OCR. Once the prescription is scanned all the data is extracted and stored making the system user friendly and robust.

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## References

- [1] R. Sunder Reddy, C. Niharika, Rohit Sharma, Bharat Kumar. “An Intelligent Patient Medicine Reminder System”, 2017.
- [2] Bhadane Ashwini, Bhuse Ishwari, Pawar Pallavi., “ An Android-based Medication Reminder System based on OCR using ANN”, August 2017.
- [3] Mayuresh Waykole, Vatsalya Prakash, Himanshu Singh., “Ardu Med - Smart Medicine Reminder for Old People”, May 2016.
- [4] Akshay Pandey, Rahul Kumar, Vinay Yadav.,

- “Smartphone-Based Medicine Intake Reminder Using GCM”, October 2016.
- [5] MD. Aby Sayeed Mondol, Ifat Afrin Emi, John Stankovic., “MedRem: An Interactive Medication Reminder and Tracking System on Wrist Devices.”, September 2016.
- [6] Android Developers. (2015, October.) Platform Architecture [Online]. Available: <https://developer.android.com/guide/platform>. [Accessed April 1, 2019].
- [7] Micro Pyramid. (2017, October) Extract text with OCR for all image types in python using tesseract. Available: <https://medium.com/@MicrosoftPyramid/extract-text-with-ocr-for-all-imagetypes-in-python-using-pytesseract-ec3c53e5fc3a>.
- [8] Swarup Kumar Raj, Kakoli De. "chapter 17 Electronic Resource Management and Digitization", IGI Global, 2020