



# FIREBASE ENABLED RESCUE MISSION ANDROID APPLICATION

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**Abstract:** During times of natural disasters, providing timely and specific information can make a significant difference in aiding affected populations in challenging environments. This study introduces the Rescue mission Service Oriented System, designed to deliver emergency assistance to those impacted by disasters. The system utilizes mobile services to gather real-time data about the users and their surroundings. It creates service agents, known as "servants," to provide active support for mobile users. These servants rely on a set of intelligent services within Rescue mission, which can further access various public services from government and other organizations to fulfill their functions..

**Keywords:** Android, Notifications, SMS system, SQLite, Real-time GPS Tracking

## I. INTRODUCTION

Rescue Mission is an innovative Android application designed to revolutionize the way emergency responders and volunteers engage in rescue operations. It leverages real-time GPS tracking, intuitive mapping interfaces, and streamlined communication channels to ensure that help is always just a tap away. This application seamlessly integrates with existing emergency services, providing a robust platform for coordinating efforts, tracking progress, and deploying resources efficiently.

Whether you're a professional responder or a volunteer, Rescue Mission equips you with the tools needed to navigate emergency scenarios with precision and confidence.

The app has a user-friendly interface that makes it easy for users of all experience levels to access. It offers features like real-time alerts, detailed terrain mapping, and incident reporting. Rescue Mission also supports offline functionality, ensuring that users remain connected even in remote or disaster-stricken areas where connectivity is a challenge. By consolidating critical information and communication into one comprehensive platform, Rescue Mission enhances the effectiveness of rescue operations, ultimately saving lives and reducing response times. With Rescue Mission, the future of emergency response is in your hands Real-time stock reports and quotation comparison process enables the procurement team to efficiently place orders and maintain stock in medical institutions.

## II. EXISTING WORK

Early research on disaster management focused on individual problems in relief operations, such as emergency facility location, vehicle routing, evacuation planning, etc. In the last decade, geographical information systems (GIS), global positioning systems (GPS), and wired or wireless communication technologies have been widely used to improve the speed of response in disaster management.

Change illustrated the use of GIS for the management of chemical emergency events in an urban environment, emphasizing integrating relevant spatial data with useful multi-scale models under a user-friendly interface.

In the existing system, the user-to-admin interaction was very and there was no immediate response from the administrator. It is a time-consuming process and users face many problems.

In the current landscape of emergency response, many systems rely on fragmented and outdated methods for communication and coordination. Emergency responders often use multiple, disconnected platforms for navigation, reporting, and communication, which can lead to delays and miscommunication during critical moments. These systems typically include standalone GPS devices, radio communication, paper maps, and sporadic use of mobile phones. Such an approach hampers the efficiency of rescue operations, particularly in complex or large-scale emergencies where timely and accurate information is crucial. Moreover, these traditional systems lack real-time integration, which means that updates on the ground situation.

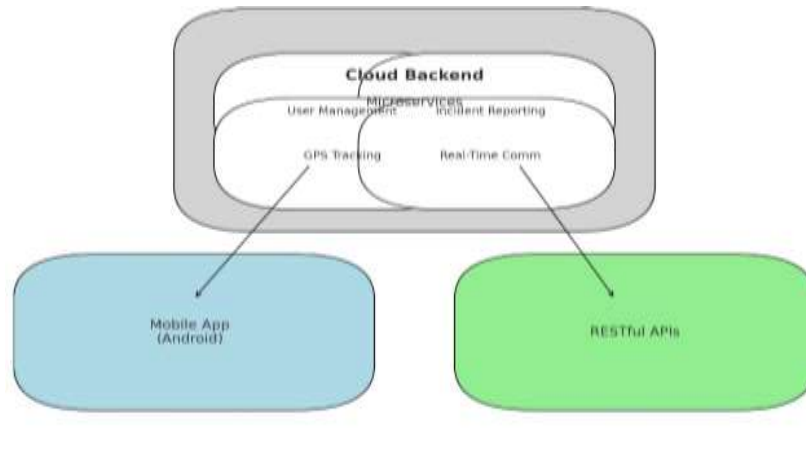
### III. PROPOSED WORK

We present the architectural structure and working mechanism of Rescue Mission, which can provide guidance and assistance for the construction of similar service-based systems.

We propose an efficient heuristic algorithm for service request scheduling, which is crucial to the success of the system and can be useful for many other service scheduling problems.

We present simulation results and real-world applications of the system, the lessons learned from which can benefit both the system developers and the disaster managers.

The proposed work involves the development and deployment of Rescue Mission, a comprehensive Android application designed to address the shortcomings of current emergency response systems. Rescue Mission will integrate real-time GPS tracking, advanced mapping interfaces, and efficient communication tools into a single, user-friendly platform. This application will allow emergency responders and volunteers to coordinate more effectively, ensuring that all parties have access to the most up-to-date information and can respond swiftly to changing conditions on the ground.



### DESIGN MODULES OF RESCUE MISSION

Application divided into three phases – VICTIM, ADMIN, SERVANT.

#### SPLASH SCREEN

Initially, when an Android application is started, the very first splash screen is opened, which will blink for 30 Sec. The Splash screen includes application names with its logo. Android Studio tool has an inbuilt feature of the splash screen and after selecting the splash screen module it directly opens the inbuilt design of the screen which can be changed according to the requirements.

#### REGISTRATION SCREEN

After the splash screen, the next screen will be a registration screen. The victim has to register himself for the further process, The registration screen includes full name, email ID, Mobile number, and full address.

Then after clicking on the Proceed button, the next screen will open which is a search screen. If the user forgets the password, then he will get the forget password link on the registered email ID by which the victim can update the password.

#### LOGIN SCREEN

The first screen will be a login screen. Admin, Victim, and Servant login with Mobile Number and Password.

##### VICTIM SIDE:

Register as a user, log in, view your profile, send disaster requests, and receive notifications about acknowledgment.

##### SERVANT SIDE:

Register as a Servant, login, view the request sent by the user, find the location of the user, and send the viewed response to the user, and save the user.

##### ADMIN SIDE:

Log in as an Admin, view the victim request, Add the servant to the victim request, and Send the feedback to the user.

### IV. SOFTWARE REQUIREMENT

#### 4.1. Development Environment

- **Programming Language:** JAVA, Android SDK
- **Database:** SQL (Structured Query Language) Lite
- **Front End:** Android UI
- **Tools:** Android Studio 3. x

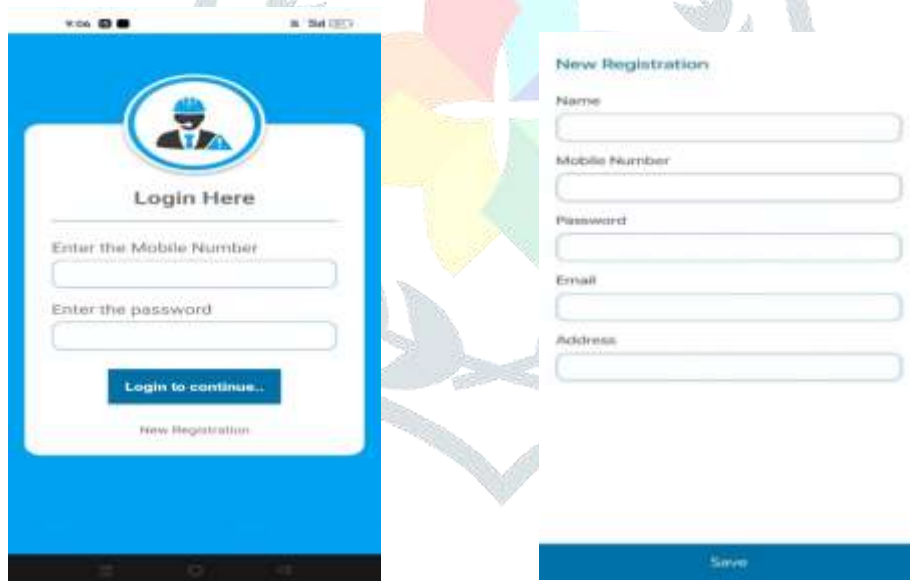
## V. RESULTS AND DISCUSSION

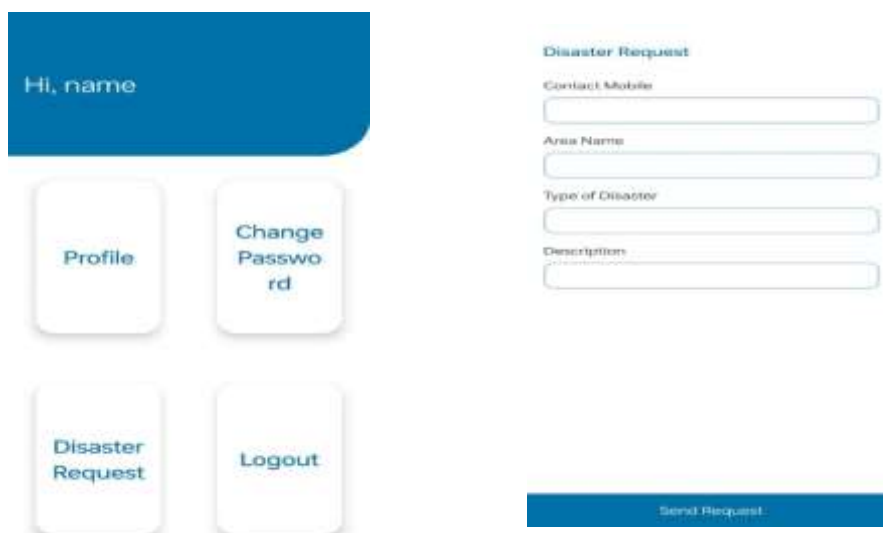
### 5.1. Splash Screen



It is a screen that appears when the user opens a mobile application, leading to the login page.

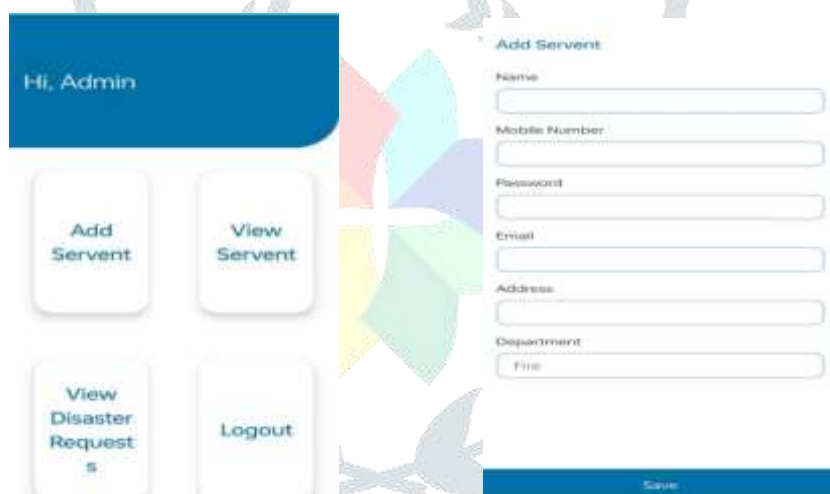
### 5.2. Login Page





To log in, existing victims, admins, and agents should enter their registered mobile numbers and password. New users can sign up for a new account by clicking on the "new registration" button. Once logged in, users can view their profiles, send disaster requests, and receive notifications about acknowledgments.

### 5.3.Admin page:



#### 5.4. Servant Page:



After logging in, you can view requests and locate them on the map. You can also access request details and open Google Maps to pinpoint the exact location of the disasters.

#### VI.FUTURE SCOPE

Implement two-way communication features such as voice calls, video calls, and text messaging within the app. Enable direct communication between rescue teams, victims, and emergency services for quick response and assistance. Develop a robust alerting system to send emergency notifications to nearby rescue teams based on geolocation and severity of incidents. Include push notifications, SMS alerts, and audible alarms for immediate attention. Enhance the app's offline capabilities to function in areas with limited or no internet connectivity. Implement offline data storage, synchronization, and emergency response functionalities that can operate offline and sync data when the internet connection is available. The future scope for a Rescue Mission Android application is promising and multifaceted.

#### VII.CONCLUSION

The groundbreaking Rescue Mission Android Application, powered by Firebase, represents a significant leap forward in the realm of emergency response and rescue operations. Leveraging the full potential of Firebase's real-time database, authentication, and cloud messaging, we have developed a robust and streamlined platform for orchestrating emergency services and delivering prompt aid to individuals in distress. This pioneering application empowers emergency responders to promptly receive alerts, access vital incident details, and seamlessly coordinate rescue missions. The incorporation of Firebase authentication guarantees secure access to sensitive data, while Firebase Cloud Messaging enables seamless real-time communication and updates among rescue teams and command centers. In essence, Rescue Mission stands ready to revolutionize the landscape of emergency operations by enhancing their efficiency and efficacy, equipping emergency responders and volunteers with the essential tools for effective coordination.

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