



Muhaafiz
A comprehensive emergency application for
Pakistan
Project Proposal

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Abstract

The lack of an emergency response system in Pakistan leads to long delays in critical incidents such as fire, theft, accidents, natural disasters, and natural calamities. This project is designed to create an emergency service app that solves these problems using modern technology to increase public safety and improve natural services urgently. Key features of the app include emergency triage, automatic emergency calls, instant hospital navigation, and a chatbot for initial advice and medical questions. In addition, the app will be integrated with facial recognition to detect people in distress or respond to an emergency, as well as a security timer that will notify services when an emergency occurs in case the user is unable to check in after the specified time while traveling alone. The app aims to revolutionize emergency response in Pakistan, making it more efficient and potentially saving lives.

1. Introduction

In Pakistan, emergency response systems are often fragmented, leading to significant delays during critical situations such as fires, thefts, road accidents, natural disasters, and medical crises. The proposed emergency response application aims to address these issues by providing a unified platform for reporting and managing emergencies.

The application will feature an intuitive incident categorization system, allowing users to quickly report various types of emergencies. It will include automated emergency calls to notify the relevant authorities with precise location details, thereby reducing response times. Additionally, the app will offer real-time hospital navigation, guiding users to the nearest hospitals equipped with the necessary medical facilities, specialists, and equipment.

To assist users in providing immediate care, the app will include a chatbot that offers step-by-step first aid instructions and answers basic medical queries. Furthermore, the app will streamline the hospital admission process by enabling users to complete necessary paperwork through the app.

The app will also incorporate advanced features such as facial recognition to quickly identify individuals involved in emergencies, which can be particularly useful for police reports or hospital admissions. Additionally, a safety timer feature will be included, allowing users to

set a timer when walking alone at night; if the user does not check in before the timer expires, the app will automatically alert emergency services and share the user's location.

By leveraging modern technology and a user-friendly interface, this emergency response application seeks to enhance public safety and security across Pakistan, ensuring timely assistance and potentially saving lives.

2. Goals and Objectives

Our project aims to develop a comprehensive emergency response application with the following key objectives:

- Enable users to report various types of emergencies quickly and accurately through an intuitive incident categorization system.
- Provide an option for users to trigger automated calls to relevant departments, including precise location details, to ensure timely notifications.
- Guide users to the nearest hospitals with real-time data on facilities and streamline admission by allowing paperwork completion through the app. Hospitals can manage resources via a dashboard, improving efficiency and patient care.
- Integrate a chatbot to provide step-by-step first aid instructions, answer basic medical queries, and assist in real-time.
- Implement facial recognition technology to quickly identify individuals involved in emergencies, aiding in police reports and hospital admissions.
- Include a safety timer feature that alerts emergency services if the user fails to check in before a set time, enhancing personal safety during vulnerable situations.
- Minimize delays in emergency response by providing accurate and timely information to both users and authorities.

3. Scope of the Project

This project aims to improve emergency response in Pakistan by creating a technology-driven system, divided into two key phases.

Phase 1 focuses on developing a strong Android app using Kotlin. This app will allow users to report emergencies in real-time and will use AI-powered chatbots to provide immediate, life-saving first aid instructions. It will also guide users to the nearest hospitals using live

GPS and hospital resource data. The app will include advanced features like facial recognition, which could help with police reports or hospital admissions. The chatbot will be customized to assist with different emergency situations, making it feel like a personal medical assistant. Additionally, the app will have a safety timer that automatically contacts emergency services and shares the user's location if not deactivated in time.

Phase 2 expands the project by building a comprehensive web dashboard using the MERN stack. This dashboard will help hospitals and authorities manage important information, such as available resources, patient admissions, and emergency incidents in different areas. An automated call service will be integrated to quickly alert emergency responders, ensuring a fast and effective connection between users and first responders. The dashboard will act as a central hub, improving the overall response to emergencies and making crisis management more efficient.

4. Initial Study and Work Done so Far

Through our research, we found out that development of public emergency apps in Pakistan have been gaining attention in recent years, driven by the increasing need for effective emergency response systems. Government initiatives like the Rescue 1122 app [1] and the Pakistan Citizen Portal [2] have made strides in enabling citizens to report emergencies and access help. The private sector and NGOs have also contributed, with apps like Rasta [3] by the Punjab Safe Cities Authority [5] and the Edhi Foundation's ambulance service [4] playing significant roles in public safety and disaster management. However, these efforts are often region-specific and cater to limited aspects of emergency handling.

Despite these advancements, there remains a gap in the availability of a truly comprehensive emergency application in Pakistan. Current solutions lack integration across various emergency services and fail to provide real-time synchronization with hospitals, which is crucial for effective healthcare management during emergencies. The application we aim to build seeks to fill this gap by covering all aspects of emergency handling, including real-time updates on the availability of doctors and medical equipment, thus offering a level of service and integration not yet seen in the country.

As far as our initial work is concerned, we have made the figma design, gathered the data, researched the various technologies we plan to use for this project and are currently working on the frontend of our application.

References

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