

RescueNow: Connecting You to Immediate First-Aid

Mrs. Lifna C.S

Dept. Of Computer Engineering
VESIT, Mumbai, India
lifna.cs@ves.ac.in

Eshan Vijay

Dept. Of Computer Engineering
VESIT, Mumbai, India
2022.vijay.eshan@ves.ac.in

Rahul Dudani

Dept. Of Computer Engineering
VESIT, Mumbai, India
2022.rahul.dudani@ves.ac.in

Yash Jha

Dept. Of Computer Engineering
VESIT, Mumbai, India
2022.yash.jha@ves.ac.in

Sumeet Janyani

Dept. Of Computer Engineering
VESIT, Mumbai, India
2022.sumeet.janyani@ves.ac.in

Abstract—Emergency response is a vital element in saving lives, but one of the most significant challenges faced today is the delay in reporting and coordination between emergency services, leading to increased fatalities. Accidents often go unnoticed or are not reported in time, leaving victims without prompt medical attention. RescueNow addresses these issues by providing a platform for real-time accident reporting and immediate alerting of emergency services such as hospitals, police, and casualty teams. Through its easy-to-use interface, RescueNow enables passersby to report accidents instantly with GPS tracking, severity ratings, and image uploads, ensuring that the nearest hospital and emergency services are notified without delay. The app integrates multiple stakeholders, allowing seamless communication, and providing real-time updates to ensure faster, more efficient emergency responses. RescueNow not only reduces response time but also optimizes collaboration between hospitals and first responders, ultimately saving lives through its comprehensive emergency management system.

Keywords—Flutter, Firebase, Emergency Response System, GPS Tracking, Stakeholder Coordination, First-Aid, Emergency Medical Service, Real-Time Communication, Accident Reporting, Multi-Stakeholder Integration, Mobile Application

I. INTRODUCTION

Despite improvements in healthcare infrastructure, India continues to face delays in emergency medical interventions following traffic accidents. One of the key challenges is the lack of real-time accident reporting, inadequate coordination between stakeholders, and inefficiencies in dispatching services, leading to delayed medical response times.

RescueNow aims to address these issues by providing a mobile-based solution that ensures rapid accident reporting and coordinated emergency response. Passersby

can report accidents instantly through the app by uploading images, providing the GPS location, and assessing the severity of the incident. The app then notifies the nearest hospitals and dispatches casualty teams to the scene. The system is designed to bridge the communication gap between passersby, hospitals, police, and victims' families, ensuring efficient and effective emergency management.

Through real-time updates, hospital notifications, and coordinated rescue operations, **RescueNow** not only improves response times but also enhances resource allocation and optimizes medical care for accident victims. The app is designed to help ensure that victims receive prompt first aid and critical care, which can significantly improve survival rates and recovery outcomes.

II. OBJECTIVES

The objective aims to encourage community participation by allowing users to contribute safety reports, share insights, and stay informed about high-risk zones.

1. Real-time Accident Reporting:

The aim is to develop a seamless reporting mechanism that enables users to instantly report accidents using GPS tracking, severity ratings, and image uploads. This ensures that emergency services receive immediate alerts, reducing response time and improving victim survival rates.

2. Automated Emergency Dispatch:

Based on real-time data collected from accident reports, this objective focuses on automatically notifying the nearest hospitals, police stations, and first responders. The app facilitates efficient coordination among multiple stakeholders, ensuring prompt action and resource allocation.

3. Emergency Response Analytics:

Using AI-driven analytics, RescueNow will assess accident patterns, response times, and resource utilization. The generated reports will provide insights for improving

emergency response strategies, optimizing resource deployment, and enhancing overall efficiency in handling emergencies.

III. LITERATURE SURVEY

The research began with determining the work done in the domain of emergency response systems. The objective of the literature review was to evaluate the stability and dependability of various tools and algorithms used in accident detection and ambulance dispatch. It analyzed performance measures and studied the role of GPS tracking and AI-based techniques in improving emergency response.

The study also examined data integration challenges and real-time coordination issues. These findings established a basis for advancements in emergency response.

Study/Report	Key Findings	Challenges and Proposed Solution
National Ambulance Service (India)	66.5% of urban calls and 59.2% of rural calls receive a response within 30 minutes.	Delayed response Times, especially in rural areas. Need for improved Emergency system.
CAG Report (Madhya Pradesh, 2017)	Average response time: 41-47 minutes exceeding the recommended standards.	Inefficiency in dispatch and lack of coordination. Faster and more efficient dispatch mechanism needed.
Handbook of NHS for England	75% of urgent cases should receive a response within 8 minutes.	India lags behind in meeting international response time benchmarks. Optimized dispatch And stakeholder coordination required.
RescueNow (Proposed Solution)	Real-time accident reporting via GPS, notifying the nearest hospital and emergency services.	Fragmented communication. A centralized platform integrating multiple stakeholders.

IV. METHODOLOGY

RescueNow aims to develop an intuitive and efficient mobile application with two distinct versions: one for **users** and another for **emergency responders**, including hospitals, police, and casualty teams. The app focuses on real-time accident reporting and stakeholder coordination, streamlining the entire emergency response process.

For emergency dispatch, **RescueNow** will deploy a combination of **Nearest Neighbor (NN)** and **First In, First Out (FIFO)** algorithms in low-demand situations to ensure the closest responders are dispatched efficiently. In moderate-demand scenarios, a **Centrality System** will be used to direct responders to the central point of incident reports. In high-demand situations, such as during natural disasters or large-scale accidents, the app will employ a hybrid system combining these dispatch strategies to optimize response times and resource allocation.

Upon reporting an accident, users and emergency teams will go through a secure **verification process** using an OTP system, ensuring that the correct responder is dispatched to the user’s location. The app will also allow flexible **payment options**, enabling users to pay during the reporting process or after the rescue operation is completed.

In the **user version** of RescueNow, individuals will be required to provide their current location, accident details, and any relevant information (such as severity, injuries, etc.) when reporting an incident. Users will have access to a history of their past reports and emergency service usage. The app will prompt the user to select between an **Emergency** (e.g., severe accident) or **Non-Emergency** (e.g., minor injuries, first aid required) scenario. In the case of non-emergencies, users will have the option to select the nearest medical facility for routine assistance. For emergencies, the user can select the accident's severity, and the nearest available hospital or police unit will be notified immediately.

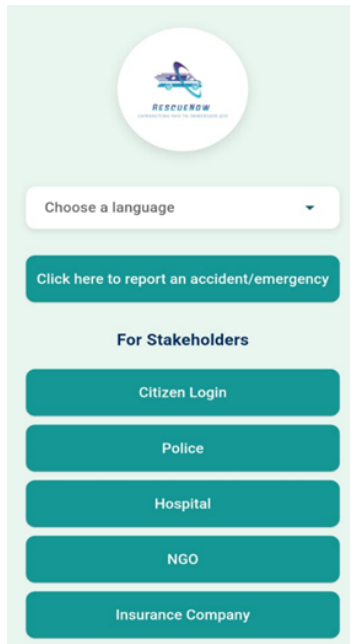
RescueNow also integrates features to **identify the nearest available hospital**, and users can track the dispatched emergency team in real time. The app will include **real-time communication tools** between users and emergency services, ensuring transparency and rapid coordination during critical situations.

For **emergency responders**, the app offers a centralized system where hospitals and police departments can monitor live incident reports and coordinate rescue operations. This ensures quick and accurate interventions in real time.

V. RESULTS

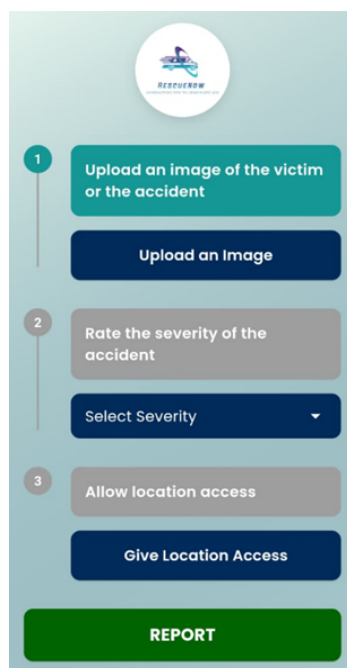
The results from the models used in the MapMyForest project demonstrate significant advancements in tree enumeration accuracy. This section compares the performance of our models against existing benchmarks and highlights key findings:

A. Users / Stakeholders Home Page



The screenshot shows the home page for users and stakeholders. At the top is a circular logo with a boat and the text 'RESCUE NOW'. Below the logo is a language selection dropdown labeled 'Choose a language'. A prominent teal button reads 'Click here to report an accident/emergency'. Under the heading 'For Stakeholders', there are five stacked teal buttons: 'Citizen Login', 'Police', 'Hospital', 'NGO', and 'Insurance Company'.

B. Reporting a Road Accident

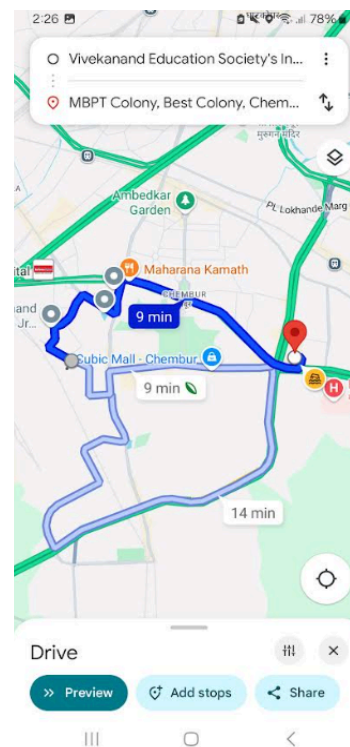


The screenshot displays a three-step form for reporting a road accident. Step 1, 'Upload an image of the victim or the accident', includes an 'Upload an Image' button. Step 2, 'Rate the severity of the accident', features a 'Select Severity' dropdown menu. Step 3, 'Allow location access', has a 'Give Location Access' button. A large green 'REPORT' button is at the bottom.

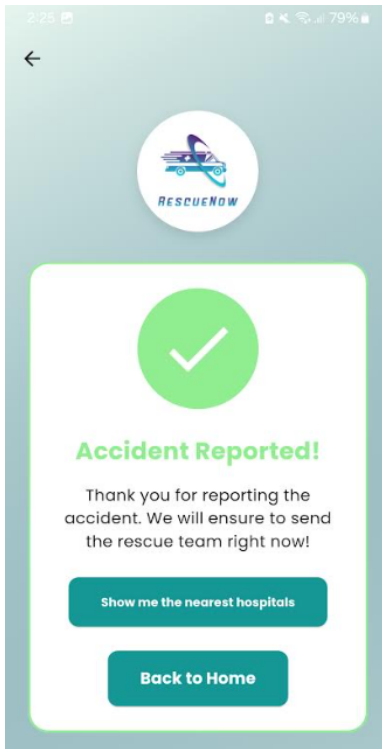


The screenshot shows the 'FindYourLostOnes' interface. It has two filters at the top: 'All' and 'Date'. Below are three user cards, each with a profile icon, name, unique ID, location, and hospital. The first card is for John (UV001) at City General Hospital. The second is for Smith (UV002) at County Medical Center. The third is for Alice (UV003) at General Hospital.

C. Find Your Lost Ones Page



D. Google Maps API



E. Accident Reported

VI. CONCLUSION

The integration of **real-time emergency response systems**, as envisioned in **RescueNow**, has the potential to revolutionize the landscape of accident reporting and emergency medical services. By enabling users to quickly report accidents with just a few taps, without the need for cumbersome phone calls, **RescueNow** drastically improves the speed and coordination of emergency responses. The user-friendly interface and intuitive design ensure that even during stressful situations, users can seamlessly report incidents and access emergency services.

The deployment of a hybrid dispatch system—utilizing location-based services and automated routing for emergency responders—further enhances the efficiency of **RescueNow**. Real-time tracking and instant notifications enable hospitals, police, and casualty teams to respond promptly, ensuring faster medical interventions and more organized deployment of resources.

Beyond speed and efficiency, **RescueNow** enhances communication and data accuracy between users and medical responders. The system securely stores user data, such as previous reports and critical health information, providing emergency teams with valuable insights to deliver personalized care. By optimizing resource

allocation based on location and demand, the platform ensures that vital healthcare services are delivered when and where they are most needed, minimizing delays and maximizing impact.

As **RescueNow** continues to evolve, the potential to streamline emergency medical services and improve road safety becomes even more apparent. The integration of technology in emergency response has the power to save lives by reducing response times and enhancing coordination across multiple stakeholders, ultimately transforming the emergency medical care system in India.

VI. REFERENCES

- 1] **P. Devi Gayatri, R. Amritha Varshini, M. Pooja, and S. Subbulakshmi**, "Mobile Ambulance Management Application for Critical Needs", in Proc. of the Fourth International Conference on Computing Methodologies and Communication, 2020. Available: IEEE Xplore, <http://www.ieee.org>. [Accessed: 10 Sep. 2023].
- 2] **A. S. Carvalho, M. E. Captivo, and I. Marques**, "Integrating the Ambulance Dispatching and Relocation Problems to Maximize System's Preparedness", *European Journal of Operational Research*, Vol.283, pp. 1064-1081, November 2019, doi: <https://doi.org/10.1016/j.ejor.2019.11.056>.
- 3] **Z. Mehdi, X. Hadi, H. Zain Abolhoda, and T. Mehdi**, "A Novel Hybrid Method for Improving Ambulance Dispatching Response Time Through a Simulation Study", *Simulation Modelling Practice and Theory*, Vol.60, pp. 170-184, October 2015, doi: <https://doi.org/10.1016/j.simpat.2015.10.004>.
- 4] **M. Sharma and E. S. Brandler**, "Emergency Medical Services in India: The Present and Future", *Prehospital and Disaster Medicine*, Vol.29, pp. 307-310, June 2014, doi:10.1017/S1049023X14000296.
- 5] **J. F. Repede and J. J. Bernardo**, "Developing and Validating a Decision Support System for Locating Emergency Medical Vehicles in Louisville, Kentucky", *European Journal of Operational Research*, Vol. 75, Issue 3, pp. 567-581, June 1994, doi:10.1016/0966-8349(95)97841-7.
- 6] **M. Panjwani and S. De**, "Computer-Based Review Analysis to Study the Shortfalls of Primary Healthcare Structure in India", in Proc. of Bangalore Humanitarian Technology Conference (B-HTC), 2020, Available: IEEE Xplore, <http://www.ieee.org>.
- 7] **N. Rathore, P. K. Jain, M. Parida**, "A Sustainable Model for Emergency Medical Services in Developing Countries: A Novel Approach Using Partial Outsourcing and Machine Learning", *Dove Medical Press Limited*, Vol. 15, pp. 193-218, February 2022, doi: 10.2147/RMHP.S338186.
- 8] **S. Ghosh, A. Choudary, and S. K. Ghosh**, "A Machine Learning Approach to Find the Optimal

Routes Through Analysis of GPS Traces of Mobile City Traffic: Proceedings of the 5th ICACNI 2017, Volume 2". Available: ResearchGate, www.researchgate.net.

9. 9] **J. Singh**, "Ambulance Emergency - India Desperately Needs Timely and Affordable Transport for Effective Healthcare Delivery", [Online]. Available: <https://www.downtoearth.org.in/coverage/ambulance-emergency-40605>. [Accessed: 25 Sep. 2023].
10. 10] **A. Verma**, "What is the State of Emergency Ambulance Services in India?", [Online]. Available: <https://factly.in/what-is-the-state-of-emergency-ambulance-services-in-india/>. [Accessed: 25 Sep. 2023].
11. 11] **N. Rathore, P. K. Jain, M. Parida**, "A Routing Model for Emergency Vehicles Using Real-Time Traffic Data", in Proc. of the International Conference on Service Operations and Logistics, and Informatics, 2018. Available: IEEE Xplore, <http://www.ieee.org>.
12. 12] **J. Holmén, J. Herlitz, S. Ricksten, A. Strömsöe, E. Hagberg, and C. Axelsson**, "Shortening Ambulance Response Time Increases Survival in Out-of-Hospital Cardiac Arrest", Journal of the American Heart Association, Vol. 21, May 2020, doi: 10.1161/JAHA.120.017048.
13. 13] **K. Sundar, M. Sridharan, and S. Ranganathan**, "An Integrated Approach to Optimize Emergency Medical Response Time Using Real-Time Traffic Data", IEEE Transactions on Intelligent Transportation Systems, Vol. 18, Issue 6, pp. 1490-1501, June 2017, doi: 10.1109/TITS.2016.2606439.
14. 14] **L. Chen, S. Zhang, and M. Xu**, "Design and Development of a Real-Time Accident Reporting System Using Cloud-Based Mobile Applications", in Proc. of the International Conference on Smart Cities and Emergency Management, 2020. Available: IEEE Xplore, <http://www.ieee.org>.
15. 15] **P. Mukherjee, A. Banerjee, and R. Kumar**, "Leveraging Mobile Technology for Road Accident Reporting and Emergency Response in India", Journal of Advances in Transportation Studies, Vol. 25, pp. 45-56, March 2021, doi: 10.4399/978872340056.