

Disaster Relief Support Platform by AI and ML

Ms. Neelima M, Mr. Sasiganth M, Mr. Ranjith Kumar V, Mr. Sujith R Mrs. Krithiga R (Mentor)

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

SRI SHAKTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, COIMBATORE.

Abstract - The Disaster Relief Support Platform enhances emergency response during disasters by utilizing AI and ML. Only verified alerts are sent to responders and impacted users thanks to AI's ability to identify and filter fake news. Rescue operations are accelerated by machine learning algorithms that determine the safest and shortest path from the responder's location to the SOS-alerted area. The platform improves coordination, situational awareness, and overall response efficiency by fusing intelligent routing with real-time verified information. This system offers a dependable, technologically advanced way to reduce risks and save lives during serious emergencies, demonstrating the useful application of AI and ML in disaster management.

Key Words: AI, ML, filter fake news, shortest path, SOS-alert, Bilingual Web App.

1. INTRODUCTION

Disaster scenarios frequently result in misunderstandings, inaccurate information, and postponed rescue efforts. In order to overcome these obstacles, the Disaster Relief Support Platform combines machine learning (ML) and artificial intelligence (AI) to increase emergency response speed and accuracy. In order to guarantee that users and responders only receive verified alerts, artificial intelligence is used to detect and filter fake news. In an emergency, machine learning algorithms help determine the safest and quickest path from the responder's current location to the area under SOS alert, cutting down on travel time. The platform facilitates better coordination between authorities, volunteers, and impacted individuals by integrating real-time alerts, trustworthy information, and intelligent routing. This project shows how disaster relief efforts can be facilitated by technology in a quicker, more intelligent, and more efficient manner.

2. Body of Paper

A. System Overview

The Disaster Relief Support Platform is an integrated system that enhances emergency response during disasters by utilizing AI and ML. It makes sure that only validated and reliable information reaches users and responders by filtering fake news using an AI-based detection module. To increase rescue efficiency and speed, the platform also has an ML-driven routing system that determines the safest and quickest route from the responder's current location to the SOS-alerted area. Additionally, responders can view alerts, routes, and updates instantly thanks to the system's support for real-time SOS alerts and unified dashboard that shows all important information. All things considered, the platform improves decision-making, coordination, and accuracy, which speeds up and strengthens disaster management.

B. Accurate Fake News Detection

In order to identify false or misleading information about disasters, the platform incorporates a robust AI-based verification system that uses a Convolutional Neural Network (CNN) model. CNN determines the authenticity of an alert or news item by analyzing linguistic patterns, contextual features, and source reliability. Only reliable and validated information is sent to users and responders thanks to this sophisticated filtering system. The platform helps all stakeholders make accurate decisions, prevents misdirection, and lessens panic by removing false information during emergencies.

C. Optimized Shortest Route Prediction

The platform employs Dijkstra's algorithm to find the safest and quickest path between the responder's present location and the SOS-alerted area in order to guarantee quick rescue operations. Based on real-time input, Dijkstra's algorithm effectively assesses every potential route, determines the shortest travel distance, and determines the best course of action. This reduces delays, speeds up reaction times, and helps rescuers maneuver through hazardous or complicated situations.

D. Real-Time SOS Alert Handling

The system transmits SOS alerts instantly, enabling dependable and quick communication. Responders receive real-time alerts when users send distress signals during emergencies. This quick information flow makes it possible for rescue teams to be mobilized quickly and enhances coordination between authorities and volunteers. Responders can effectively prioritize actions and keep an eye on multiple alerts thanks to real-time updates.

E. Enhanced Situational Awareness

The platform offers a thorough real-time overview of the disaster situation by combining verified information, alert locations, and route predictions. Responders can see which routes are best, which areas are most affected, and which alerts need immediate attention. Better resource allocation, quicker decision-making, and more successful handling of high-risk situations are all results of this increased situational awareness

F. User-Friendly and Integrated Interface

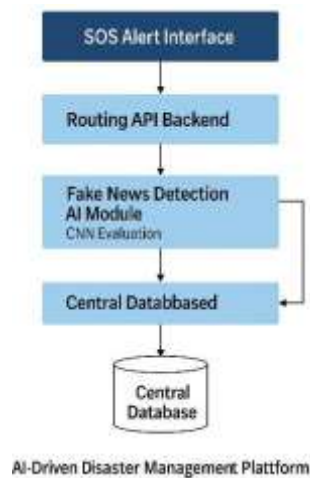
The platform's interface is simple and easy to use, and it clearly displays routes, alerts, status updates, and key visuals. Even in high-stress situations, users and rescue crews can easily navigate the system. The platform is very accessible and effective for disaster response in the real world because of the integrated dashboard, which guarantees smooth interaction with all modules—fake news detection, routing, and SOS handling.

Table -1: Sample Table format

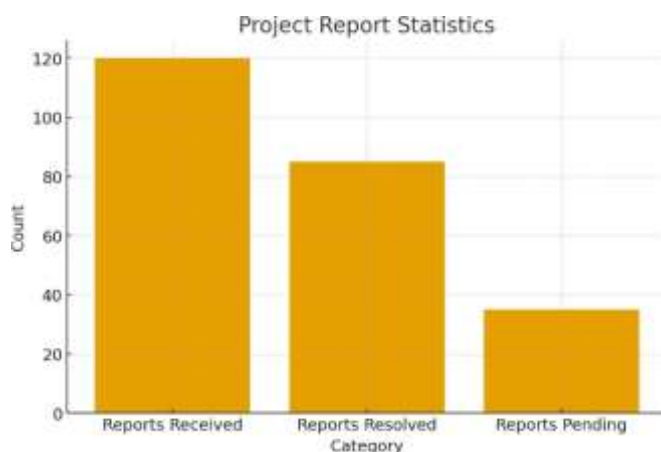
FIELD NAME	DESCRIPTION	SAMPLE VALUE
Report ID	Unique ID assigned to each SOS alert	RPT10245
User ID	Identifier of the user sending the alert	U5893
Alert Type	Category of emergency reported	Flood / Fire

Location coordinates	Latitude and longitude	13.0827, 80.2707
Alert Type	Category of emergency reported.	Flood / Fire
Alert Timestamp	Date and time the SOS message	2025-11-15 14:32:10
Verified Status	news/alert is verified by AI	Verified / Fake
Route Start Point	Responder's current location	12.9716, 77.5946
Route End Point	Destination (SOS-alerted region)	11.0168, 76.9558
Shortest Path Distance	Using Dijkstra's algorithm	18.6 km
Response Status	Current action taken on the alert	In Progress / Completed
Responder ID	Identifier of the responder handling the case	RES204
Model Used	To identify fake news	CNN-Based Classifier

Fig -1: Figure



Charts



3. CONCLUSIONS

The Disaster Relief Support Platform effectively combines machine learning-driven route optimization with artificial intelligence (AI)-based fake news detection to increase the effectiveness of emergency response. The system minimizes misinformation, speeds up decision-making, and guarantees prompt assistance in emergency situations by utilizing a CNN model to confirm the accuracy of the information and Dijkstra's Algorithm to determine the quickest rescue routes. Coordination between users and responders is further improved by the user-friendly interface and real-time SOS alert handling. All things considered, the platform shows how intelligent technologies can improve disaster management, reduce delays, and facilitate safer, quicker, and more dependable rescue operations.

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