

VisionRelief: An AI Powered Drone System for Victim Detection

Mr. Parikshit Sardar¹, Miss. Tanvi Bhalerao², Miss. Siddhi Thorat³, Prof. Shubhangi Said⁴

Students, Department of Artificial Intelligence And Data Science^{1 2 3}

Professor, Department of Artificial Intelligence And Data Science⁴

JCEI's Jaihind College of Engineering Kuran, Maharashtra, India

Abstract: Natural disasters such as floods, earthquakes, and landslides frequently result in extensive damage, loss of life, and delayed relief due to inaccessible terrains and damaged infrastructure. To overcome these challenges, VisionRelief introduces an AI-powered drone-based disaster response system designed to deliver emergency medical supplies, communication devices, and aid packages to affected areas in real time. The system integrates computer vision, thermal imaging, and satellite mapping to detect survivors, classify disaster zones, and optimize drone navigation using intelligent pathfinding algorithms. With a payload capacity of up to 5 kilograms, the drone autonomously identifies and prioritizes red zones, ensuring immediate relief delivery where it is most needed. Additionally, the VisionRelief web and mobile platform enables government agencies, NGOs, and foundations to monitor missions, track survivors, and analyze real-time data through an interactive dashboard. This AI-driven solution significantly reduces response time, enhances operational efficiency, and improves situational awareness during critical emergencies. The implementation of VisionRelief aligns with the United Nations Sustainable Development Goals (SDGs) — particularly Goals 3 (Good Health and Well-being), 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities), and 13 (Climate Action). The proposed system demonstrates a scalable, cost-effective, and socially impactful approach to modernizing disaster management using emerging technologies.

Keywords: AI-Powered Drones, Disaster Management, Real-Time Detection, Satellite Mapping, Autonomous Navigation, Victim Localization, Rescue Operations, VisionRelief System

