Enhancing Victim Detection in Disaster Scenerios-A YOLOv7 and YOLOv8 performance study

Dr V Ravi Kumar[1], E Rishitha[2], D Deepthi[3], P Shashidhar[4], S Sairam[5]

Professor and HOS, Department Computer Science Engineering[1]
Students, Department Computer Science Engineering[2-6]
ACE Engineering College, Ghatkesar, India

Abstract: *Agricultural productivity plays a vital role in ensuring In the aftermath of natural disasters like earthquakes, rapid identification of victims is vital for efficient rescue operations. The ability to locate victims accurately and quickly amidst debris and challenging conditions can make a critical difference in saving lives. This study evaluates the performance of two advanced object detection models, YOLOv7 and YOLOv8, for victim detection in disaster scenarios. Both models were trained on a specialized dataset that simulates post-disaster environments, incorporating diverse and realistic challenges such as occlusions, varying lighting conditions, and complex backgrounds. The experimental results demonstrated an accuracy of 58% for YOLOv7 and a significantly improved accuracy of 81% for YOLOv8, showcasing the latter's superior capability in detecting human bodies among debris. Additionally, YOLOv8 outperformed YOLOv7 in terms of precision, recall, and detection speed, making it better suited for real-time applications. YOLOv7, while less accurate, demonstrated a faster inference time, which could be advantageous in scenarios requiring rapid initial assessments.*

Keywords: Natural disasters, Earthquakes, identification, Rescue operations, Object detection, YOLOv7,YOLOv8, Victim detection, Disaster scenarios, Specialized dataset, Post-disaster environments, Occlusions