

ABSTRACT

Rapid and accurate flood monitoring is crucial in supporting disaster mitigation efforts and decision-making in the field. In this final project, an automatic flood monitoring system based on computer vision is developed, integrated with a drone camera and the YOLOv8 object detection algorithm to detect flood-affected areas and submerged vehicles from aerial images in real-time. The system utilizes the Roboflow platform for dataset labeling, augmentation, and training processes, thereby improving the efficiency of model development. The trained model is exported in the best.pt format and executed locally using Python within the VSCode environment. Detection results are visualized with bounding boxes and object labels over the affected areas. Testing was conducted using field data with varying drone angles and lighting conditions. However, accuracy may decrease when images are captured at sharp angles or under poor visual conditions, such as shadows and water reflections. This system can serve as a more flexible and responsive alternative to conventional flood monitoring methods, with the potential to be implemented by disaster management agencies or related authorities for monitoring flood-affected areas.

Keywords: flood monitoring, drone, object detection, YOLOv8, disaster mitigation.