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AI-Powered Object Detection for the Visually Impaired (AODVI)

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Abstract*:* *Visual impairment impacts a large number of people around the world and makes daily activities such as navigation and object identification difficult. While conventional aids such as white canes provide basic mobility support, they fall short of giving users a meaningful understanding of their immediate environment. This paper presents the AI-Powered Object Detection for the Visually Impaired (AODVI) system, which combines real-time computer vision with audio feedback to bridge this gap. The system uses a camera to capture live surroundings, processes the frames through a YOLO-based object detection model, and instantly relays detected object information to the user via a text-to-speech engine. By integrating GPS-based location awareness and an emergency alert mechanism, AODVI aims to offer a practical, affordable, and portable solution that enhances the independence, safety, and mobility of visually impaired individuals*

Keywords: Artificial Intelligence, Object Detection, Computer Vision, Deep Learning, YOLO, Assistive Technology, Text-to-Speech, Real-Time Processing, Accessibility, GPS Navigation