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Real time Object detection for visually impaired

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Abstract

The ubiquitous and wide applications like scene understanding, video surveillance, robotics, and self-driving systems triggered vast research in the domain of computer vision in the most recent decade. Being the core of all these applications, visual recognition systems which encompasses image classification, localization and detection have achieved great research momentum[1]. Due to significant development in neural networks especially deep learning, these visual recognition systems have attained remarkable performance. Object detection is one of these domains witnessing great success in computer vision.

Detecting objects in real-time and converting them into an audio output was a challenging task. Recent advancement in computer vision had allowed the development of various real-time objected detection applications. This paper describes a simple android app that would helped the visually impaired people in understanding their surroundings. The information about the surrounding environment was captured through a phone camera where real-time objected recognition through tensorflow's objected detection api was done. The detected objects were then converted into an audio output used android's texted to speech library. Tensorflow lite made the offline processing of complex algorithms simple[2].

Keywords - Computer vision, visual recognition,neural networks, Tensorflow, TensorFlow Lite, Machine learning,Deep Learning, Object recognition, and Android