REAL TIME VIDEO OBJECT DETECTION USING DEEP LEARNING TECHNIQUES

A PROJECT REPORT

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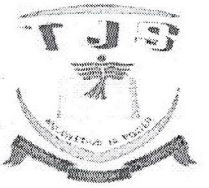
in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING



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JUNE 2022

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Certified that this project report "**REAL TIME VIDEO`OBJECT DETECTION USING DEEP LEARNING TECHNIQUES**" is the bonafide work of "***JEBASTI SANJANA.A(112818104020),MUGILA.K(112818104036), SUBHASHINI.A(112818104051)***" who carried out the project work under my supervision.

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This paper deals with the design and implementation of "**Fast Deep Neural Networks with Knowledge Guided Training and Predicted Regions of Interests for Real-Time Video Object Detection**" using *Raspberry pi* and *Tensor flow*. This Project is Real Time Object Detection Using Tensor Flow Lite system has been developed to help visually impaired people for navigation and surrounding objects detection. This system is based on raspberry pi 3, a single board compute model and Tensor Flow lite framework. The algorithm developed is tested for detecting objects like a table, a chair, a TV, a laptop, a mouse, a cell phone, a bottle etc. The Faster Region BasedConvolutional Neural Network model (Faster R-CNN) developed using tensor flow Lite. The processor was connected to a Raspberry Pi, Camera and Audio device. The processor was coded in python, a high level programming language, needed to process images in real time. The camera captures an image in real time which was processed by the Raspberry Pi-3 processorthe python code uses the R-CNN model to identify the obstacle with boxes and category index. The recognized image category was extracted and stored in a text file. The contents of the text file are converted to voice using the PYTTS to Speech module. This system is extremely flexible and can be used in any environment, without any priming. This system is capable of detecting people as well as objects. The detection accuracy of 85% is achieved. The testing is done in varying light, background, and distance in indoors as well as outdoor scenarios. This system uses quantized SSDLite-MobileNet-v2 object detection model, which is trained of the MSCOCO dataset and converted to run on TensorFlow Lite. The information regarding the detected object is converted into Audio for guiding the visually challenged person.

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