Object Detection using Tensor Flow API

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Abstract: *This paper is based on object detection using Tensor flow. Due to object detection's close relationship with video analysis and image understanding, it has attracted much research attention in recent years. 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. 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. This paper demystifies the role of deep learning-based object detection frameworks and its representative tool, namely Convolution Neural Network (CNN). So, by studying these we decided to train a model for Mask detection and also for object detection using Single Shot Detector (SSD). After the breakout of the worldwide pandemic COVID-19, there arises a severe need of protection mechanisms, face mask being the primary one. The basic aim of the project is to detect the presence of a face mask on human faces on live streaming video as well as on images. We have used deep learning to develop our face detector model. The architecture used for the object detection purpose is Single Shot Detector (SSD) because of its good performance accuracy and high speed. Alongside this, we have used basic concepts of transfer learning in neural networks to finally output presence or absence of a face mask in an image.*

Keywords: Tensor Flow, Convolution Neural Network,Single Shot Detector, Object Detection, Deep Learning, etc.

REFERENCES

[1] Haddad, J., 2020. How I Built A Face Mask Detector For COVID-19 Using Pytorch Lightning, https://towardsdatascience.com/how-i-built-a-face-mask-detector-for-covid-19-usingpytorch-lightning-67eb3752fd61.

[2] Hussain Mujtaba, Jul 24, 2020 Real-Time Object detection using TensorFlow, www.mygreatlearning.com/blog/object-detection-using-tensorflow/

[3] Mustamo P. (2018)- "Object detection in sports: TensorFlow Object Detection API case study". He has developed and studied the TensorFlow Object Detection case deeply for making it applicable in sports region. The aim of his study was to explore the modern open source-based solutions for object detection in sports, in this case for detecting football players.

[4] http://jultika.oulu.fi/files/nbnfioulu-201802081173.pdfG.Eason,B Noble and I.N.Sneddon, "on certain integrals of Lipschitz Hankel type involving products of Bessel functions," Phil.Trans Roy Soc.London,Vol A247,pp.529-551,April 1995.

[5] Zhong-Qiu Zhao, Peng Zheng and Shou-Tao Xu are with the College of Computer Science and Information Engineering, Hefei University of Technology, China. Xindong Wu is with the School of Computing and Informatics, University of Louisiana at Lafayette, USA. (2017) - Here authors explained

how actually object is identified and more about object detection and Deep Learning. https://ieeexplore.ieee.org/abstract/document/8627998/authors#authors.