

Object Recognition for Aged People Using Machine Learning

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Abstract: This paper exhibits an item acknowledgment framework dependent on Machine Learning (ML) calculations for ordering distinctive indoor articles to improve nature of old individuals' life. There is a straightforward outline of the datasets and profound learning calculations normally utilized in object acknowledgment. The situation of the item can be set apart in the info, or the information may be just an away from of article. The places of articles are either obtained from the information, or decided dependent on the information picture.

Keywords: Object recognition, Machine learning.

1. Introduction

Normally when people get old their vision get impacted. Some face problem of blurred vision due to cataract or weak optic nerves. These conditions challenge them to see the surroundings clearly. Resulting in fall and other injuries. This will help the aged people to identify the objects in front of them. Which will eventually help them to walk on their own without seeking others help. We can also incorporate ear phones / ear machines to guide their way.

CNN (Convolution Neural Network) has gained extraordinary ground in object recognition. Article discovery is creating from the single item acknowledgment to the multi-object acknowledgment. The significance of the first is simply from a picture to recognize a solitary article, including the specific area of the items.

2. Dataset

A Dataset is a collection of all the data points that is required by the algorithm to train itself to get a better prediction so that the result can be more accurate. The dataset consists of many columns and the columns header i.e., under which the data points are present. Dataset is one of the establishments of profound learning. Dataset for ML is the key fixing to apply the correct programming. A dataset is an assortment of information. In this paper the dataset used is COCO (Common Object in Context) Dataset. This dataset consists of more than 7 million images that is classified into 80 different classes.

A. Neural Network

Deep learning utilized by the system has been continually improving, notwithstanding the adjustments in the system structure, the more is to do some tune dependent on the first system or apply some stunt to make the system execution to upgrade. The more notable calculations of article recognition are a progression of calculations dependent on R-CNN, for the most part in the accompanying.

3. Object detection with R-CNN

As a human when we see our surrounding, we perceive the objects around us in one shot. Besides, identifying little items by itself is an interesting issue because of a few difficulties. The framework can take an information picture, removes around 2000 base up locale proposition, registers highlights for every proposition utilizing an enormous convolutional neural system (CNN). The R-CNN calculation, which extricates discriminative highlights utilizing profound convolutional neural system from area recommendations, has been built up as the best in class approach for object recognition.

A. YOLO

YOLO refers to You Only Look Once. YOLO is a deep learning algorithm that is used to detect and recognise the different objects present in the surrounding environment. We can use the YOLO algorithm to implement this paper.

4. Background

Nowadays Object recognition is one the most interesting area to work on. Object recognition plays an important role in Machine Learning and Artificial Intelligence. In object recognition the machine plays a vital role in finding the features of the objects under some of the predefined classes in the dataset. This classification is known as the object classification. In CNN, R-CNN one of the pre-built model is Object recognition.

5. Working

Aged people use optic glasses to see clearly, since they have

blurred vision. This paper proposes to implement object recognition in their daily lives. This will help them to easily detect the obstacles / objects in front of them while they are walking. The system consists of Spectacles, Earphones, Miniature Camera, Raspberry Pi, Wi-Fi Module and USB interface.

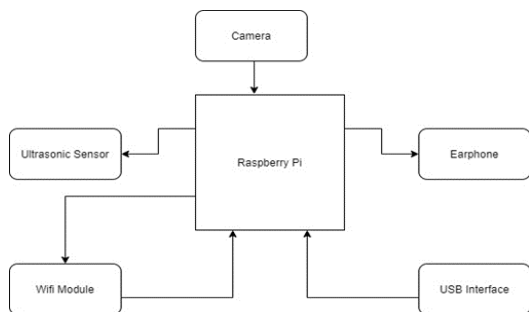


Fig. 1. System architecture

The miniature camera will be fixed on the centre of the spectacle, which will be recording the video throughout. The objects that are being captured by the camera will be recognised by datasets based on their features. Once the object is detected, the name of the object detected will be converted to text using ‘Tesseract’. This text will be then converted to speech.

The earphones will be incorporated with the miniature camera and the spectacle with the use of Raspberry Pi. The text that is converted into speech will be sent to earphones, so that

the person can hear name of the object which is in front of him/her. Speech mechanism will also guide the person about the directions. Ultrasonic sensors can also be used to find the distance between the object and the person. It will guide the person to move / walk accordingly.

TCS3200 Sensor Module is used to identify the colours. This sensor consists of square boxes. These boxes are used to recognise the different colours. This will help the person while crossing the road to identify the colour of traffic signal.

6. Conclusion

The implementation of this system will help aged people (those with vision related issues) to walk on their own without seeking help of others. Instead of the conventional method, use of this system is more flexible and portable as well. By using this system, aged people will be aware of their environment and the steps they take.

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