International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 06 | June 2020 www.irjet.net p-ISSN: 2395-0072

Object Detection for Blind User's

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Abstract - *The Smart Blind Navigation is fill gap, providing accurate and contextually rich information about the environment around the user current location, and simplifying the navigation and increasing the overall accuracy of the system. Preventing the user from dangerous locations. They have very little information on self-velocity objects, direction which is essential for travel.*

The navigation systems is costly which is not affordable by the common blind pepole. The navigation system are heavy complicated to operate.

Key Words*: IOT (Internet of Things), Machine Leraning, T*ensorflow, Raspberry Pi 3, Regions Convolutional Neural Network.

1. INTRODUCTION

The Technology for navigation of the blind is not sufficiently accessible devices rely heavily on infrastructure requirements. Without vision it can be challenging for visually im-paired persons to navigate through rooms or different road paths .The main aim to develop the project is to help the visually impaired people and to detect the obstacles to detect the road traffic signs. The blind persons life become easier and they can go anywhere where they wants without anyone helps .They can walk alone through street they does not need anyone to assist them they can handle their self correctly. The preventing users from dangerous location our aim is to collected from environment (cameras, sensors, scanners, etc) and transmitted to the users to the audio format. When sensors identify objects it send the data to the audio module and get converted into audio clip. An obstacle as close as 4 cm can be detected by these module. The objective of these project is to provide cost effective way to allow path planning for blind people. With the help of object detection system and navigation system the blind person can easily detect the object through cameras or through some sensors. For example, it is very difficult for to find a particular room in an unfamiliar environment. The blind and visually impaired people find it difficult to know a person is talking to them or someone else during a conversation. The Computer vision technologies, especially neural network, have been rapidly developed. The aim of to guide the blind people through the output of processor or controller to navigate them. The purpose of the project is to a system to help blind people in their life. With the help of these system the blind person do their work more effectively. They does not depend on any others to perform any activity. With the help of these system they can walk alone on the road or traffic areas or the park anywhere they want. They are very curious about the beauty of the world, what happening in front so with the help of these system they can enjoy their life. The portable device, designed for visually impaired people to assist them with getting around. Most commercially available devices, these device should provide direction to location and alert the blind people of obstacle in their path one of the most important things is to alert the blind peoples to any obstacle in their path and navigate the road or different areas to the blind persons through the voice assistance. It converts the message and these message send to the users through the audio signal, it also detect the road traffic signs, with all of these module the blind persons life become easier. In these way we are try to developing the project to help the blind people and they can enjoy their life.

1.1 LITERATURE SURVEY

According to [1] Juan and O. Gwon, aˆA Comparison of SIFT, PCASIFT and SURFˆa.International Journal of Image Processing(IJIP), 3(4):143 aˆ 152, 2009.

According to [2] Hanen Jabnoun, Faouzi Benzarti , Hamid Amiri , Visual substitution system for blind people based on SIFT descriptiona, International Conference of Soft Computing and Pattern Recognition 2014 IEEE.

According to [3] Hanen Jabnoun, Faouzi Benzarti,and Hamid Amiri, Object recognition for blind people bsed on features extraction IEEE IPAS a14:INTERNATIONAL IMAGE PROCESSING APPLICATIONS AND SYSTEMS CONFERENCE 2014.

According to [4] Raspberry pi user guide;Eben Upton and Gareth Halfacree; 312 pages;2017;ISBN 9781118921661

According to [5] Esteban Bayro Kaiser, Michael Lawo,aˆWearable Navigation System for the Visually Impaired and Blind Peopleˆa, IEEE, 2012.

2. DESIGN AND ARCHITECTURE

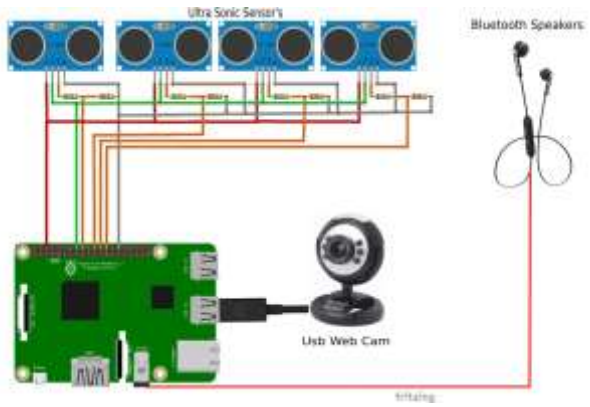

Fig 2.- Architecture Diagram

The above figure 2 shows the entire execution process of system .These are various contain are used like headphones, Raspberry Pi circuit and sensors are used .The two type of algorithm are used in the process. Tensorflow algorithm and RCNN algorithm.

1) Raspberry Pi circuit:

The raspberry pi can be used for user requirement. we are using raspberry pi for image and video processing . raspberry pi is low cost and small sized chips.

Fig 3: Raspberry Pi circuit

2)Headphones: The headphones are used in the to help the blind person to detect the object. And the headphone are connected to the Raspberry Pi circuit. And to help the blind person are easy to detect the object and the voice.

3. WORKING MODULES:

These are the system are used the four type of modules they are explain follow:

Object Detection: In this phase are very easy to detect the real world objects. Like humans in still images or Videos. Below diagram are the examples of the how to object are detected easily.

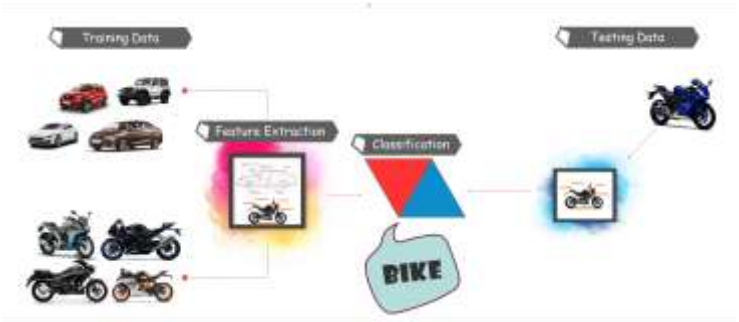

Fig 4 - Example of Object Detection

Traffic Sign Detection : In that phase to the help of blind person are detect the easily traffic signals because of these system. Are system they protect to the life.

Voice Assistant : In that phase the system is only used for visually impaired, there is no unbelievable to make it very easy and reliable. The System speaks out everything and user wants to listen from the system and user all custom layouts but data from the system hence saving a lot of size. Most important things doesn't require an internet connection. These modules are easy to help to blind person.

4. TECHNOLOGIES USED IN THE PROPOSED SYSTEM

Their are the Two type of algorithm are used show in below explain in detail:

1) TENSORFLOW ALGORITHM:

TensorFlow algoritham is open machine learning framwork for used in devlopers. TensorFlow algoritham are also called "Goggle " product. It is API are used in the object detection that is images and videos. The TensorFlow alogoritham are used in deep learning it can help to classifier.

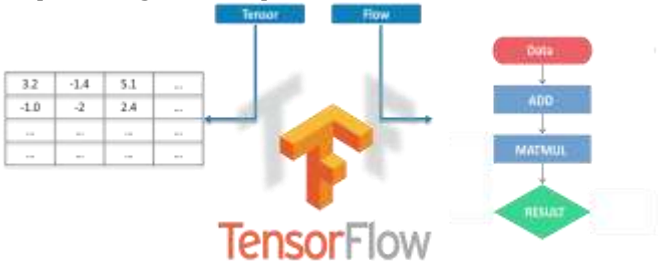

Fig 5 : Basic Structure of TensorFlow Algoritham

The Above Diagram are the working of tensorflow algoritham is the shows the one side the table that are collected the data that is called the "Tensor." and the another side are the flow the data are the add and multiple data are the lastly result are founded.

2) RCNN ALGORITHAM:

RCNN stands for the (Regions With Convolutional Neural Networks). The RCNN are the provides object detectors for the R-CNN, Fast R-CNN, and Faster R-CNN algorithms.It two stage algoritham first is dentifies a subset of regions in image object,and the second is classifies the object .

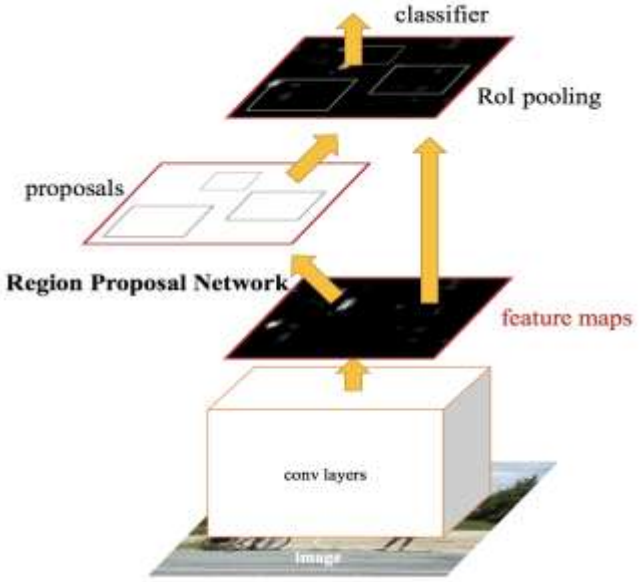

Fig 6: Basic Architecture of RCNN

The Regional Convolutional Neural Network plays a significant role in image segmentation and helps in the identification of the object. The COCO(Common Objects in Context) dataset is used in Faster RCNN.

5. RESULT AND EVALUATION

CASE 1:

Fig 7: Object Detection (Single Entities)

In that the above fig are shows the result of the project how to object are detecated in that fig Once the script initializes 30 sec you will see a window with a live view from your camera. Common objects inside the view will be identified and have a rectangle drawn around them. The fig shows the single objects laptop are the 87% accurracy are shows .

CASE 2:

Fig 8 : Object detection (Multiple Entities)

In that fig clearly shows the multiple entities at a one time that is the bottles are identify with 95% accuraccy and clock are the shows 97% , keyboard are shows the 55 % ,cup are the 69% accurracy.

Advantages of system:

- The system are used in the real time object detection.
- It helps to Blind person are the prevent to dangerous location.
- These project is to provide cost effective way to allow path planning for blind people.

7. CONCLUSIONS

In this project we present a visual system for blind people based on object like images and video scene. This system uses Deep Learning for object identification. In order to detect some objects with different conditions. Object detection deals with detecting objects of inside a certain image or video. The TensorFlow Object Detection API easily create or use an object detection model Blind peoples they have a very little information on self-velocity objects, direction which is essential for travel. The navigation systems is costly which is not affordable by the common blind people. So this project main aim is to the help of blind people.

8. REFERENCES

[1] Juan and O. Gwon, aˆA Comparison of SIFT, PCASIFT and SURFˆa. International Journal of Image Processing(IJIP), 3(4):143 aˆ 152, 2009.

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