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Blind Assistance System Using Object Detection

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Abstract: *Computer Vision impairment or blindness is one such top ten disabilities in humans, and unfortunately, India has the world's largest visually impaired population. For this we are creating a framework to guide the visually impaired on object detecting and recognition, so that they can navigate without others support, and be safe within their surroundings. In this system the captured image is taken and sent it as input using camera. SSD Architecture is used here for the detection of objects based on deep neural networks to make precise detection.. This input will be given to the software and it will be processed under the COCO datasets which are predefined in the Tensor flow library used as training dataset for the system in general this data set consist of features for nighty percent of real world data objects and using voice assistance packages the software will produce the output in the way of Audio.*

Key Word: *Blind Assistance System ,Object Detection*

I.INTRODUCTION

The fast progress of data and organize technology has advanced from the Internet and computerization systems that were initially utilized for authoritative offices and mechanical and economical applications to the application of these innovations every one's life. Once you think of technology like augmented reality, one of the key components to consider is object acknowledged innovation, moreover known as object detection. This term specifies to a capacity to distinguish the frame and shape of diverse objects and their position in space caught by the camera. It's a known reality that the number of visually disabled individuals within the world is almost more than 280 million, roughly break-even with the 25% of the Indian population. They suffer-normal and difficult challenges in regular activities particularly when they are on their own. They are generally dependent on somebody for getting to their day-to-day works. So, it's a very challenging and the nonphysical arrangement for them is of most extreme significance and much required. One such solution from our side is that we came up with an Machine Learning Framework permits the blind activities to distinguish and classify general Time Based day-to-day object and produce voice outputs and The same framework can be used for Obstacle Detection Instrument. The primary reason for object detection is to find different things, which draw rectangular bounding boxes around them, and decide the course of each item found. Applications of object discovery emerge in large no of diverse domains counting recognizing people on foot for self-driving vehicals, checking crops, and indeed real-time ball following the basket.

II.OBJECTIVE

The project goal is to incorporate an art of techniques for object detection to achieve high accuracy with real time detecting performance. In this project, we use Python programming language with an Tensor Flow-based solution for solving the problem of object detection in an end-to-end solving fashion. The proposed system will be fast and efficient. A Tensor Flow based application approach for an mobile device, using its built-in hardware component camera is used for detecting objects, more specifically: The framework is prepared in such a way where an mobile application (assuming you're using it on an Laptop camera will capture real-time frames and will send them to the backend of the application where all the predefined computations takes place.

III.MODULE IDENTIFICATION

Scenario 1: A blind person can get hurt due to the obstacles in its way.
Scenario 2: A person should always be there by the side of a blind person.
Scenario 3: while crossing the a road.
Scenario 4: Accidents and casually getting hurt from small obstacles can be avoided.

IV.LITERATURE REVIEW

OBJECT DETECTION USING CONVOLUTIONAL NEURAL NETWORK In 2019, "Object Detection using convolutional Neural Networks". As Vision systems are essential in building a mobile robot. That will complete a certain task like navigation, surveillance, and explosive ordnance disposal (EOD). Vision systems are essential in building a mobile robot. A project was proposed based on CNN, which is used to detect objects in the environment. Methodology used- Two state of art models are compared for object detection, Single Shot Multi-Box Detector (SSD) with MobileNetV1.

Another methodology is A Faster Convolutional Neural Network (Faster-RCNN) with the help of InceptionV2. IMAGE BASED REAL TIME OBJECT DETECTION ALONG WITH RECOGNITION IN IMAGE PROCESSING In 2019, "Image Based Real Time Object Detection and Recognition, In Image Processing" Object detection and tracking mainly for human and vehicle is presently most active research topic. It is used in applications such as surveillance, image retrieval. A

solution was proposed which has reviewed recent technologies for each phase of the object detection. The methodology used here is four different methods for object detection which is nothing but a computer technology related to computer vision with image processing that deals with detecting instances of semantic objects of a certain class in digital images and videos and, they are feature based detection, region based detection outline based detection illustrations and model based detection.

SALIENT OBJECTS DETECTING WITH SEGMENT FEATURES USING MEAN SHIFT TECHNOLOGY In 2020, "Salient Object Detection with Segment Features Using Mean Shift Algorithm". The object recognition has attracted high attention for its diverse applications in everyday life. It is used in applications such as surveillance, image retrieval. A solution was proposed which introduced a new fast method for saliency object detecting within images. The main aim was detection of objects in complex images. The methodology used has four steps: regional feature extraction, segment clustering, saliency score computation and post-processing. REAL-TIME OBJECT DETECTION USING DEEP LEARNING In 2020, "Real-Time Object Detection Using Deep Learning". Object detecting, recognition in images and videos is one such major thing today. For this a solution was proposed using deep learning.

V.SYSTEM ARCHITECTURE

The proposed system is an intelligent Blind Assistance system that could help the blind person . We can provide 24/7 video surveillance in locations where human intervention is not possible due to geography, climate, or other reasons. Several pyroelectric infrared sensors (PIRs) have been installed camouflaged on the border fence to monitor border area intrusion.

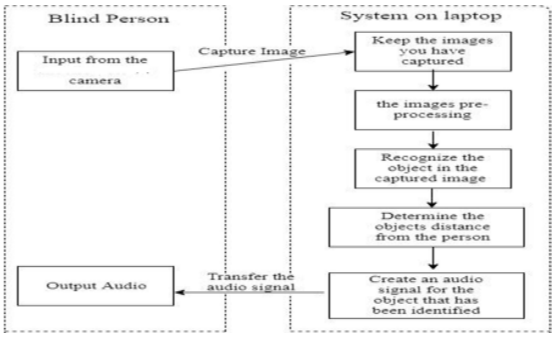

Fig.0.1 Working of blind assistance

VI.APPLICATION

An intelligent Blind Assistance system not only helps the Blind person but make it less dependent on others. It can even avoid accident and the changes of the person getting hurt from something .

VII.ADVANTAGES

This system can build confidence and give a spark of hope to the visually impaired person. Adding some more features to it can enhance the system more and make it more effective and useful. The visually impaired wouldn't need someone always to guide he/she and can be more independent.

VIII.PROBLEM FINDING

The Populated number of people visually impaired in the world is more than 290 million. In this 42% are blind and 58% have no vision. They are an important part of our society. It's very difficult for them to live the outside world independently. Today in the fast moving society, visually impaired people require supportive instruments in their day-to-day life. Our thought primarily centered on developing an assistive framework for impaired people to detect objects effectively which can be helpful to live.

IX.CONCLUSION

Several technologies have been created to aid visually impaired persons. One such attempt is that we would wish to make an Integrated Machine Learning System that allows the blind victims to identify and classify real-time objects generating voice feedback and distance. Which also produces warnings whether they are very close or far away from the thing. For visually blind folks, this technology gives voice direction. This technique has been introduced specifically to assist blind individuals. The precision, on the other hand, can be improved. Furthermore, the current system is based on the Android operating system; it can be altered to work with any device that is convenient.

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