DESIGN AND IMPLEMENTATION OF SMART STICK AID FOR VISUALLY IMPAIRED PEOPLE

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Abstract- In this project, visually impaired people can gather information by voice. visually impaired people can read the text in the image. In this project we are using Raspberry Pi Camera and this is a photographic aid and that image is converted into a scanner image to further the process using the Magic image software. To converts text into speech we use the TTS (Text to Speed) engine. Test results show that the analysis of different images taken and will greatly help to blind people.

***Key Words*:** Sensor, Raspberry Pi, GPS, obstacle detection, alert messages.

1. INTRODUCTION

Globally, it is estimated that at least 2.2 billion people have visual or visual impairments, at least 1 billion of whom have preventable or chronic eye problems. Today, about 2-3 percent of the world's population is blind and visually impaired. When we show an image, our brain quickly detects what is in it. On the other hand, it takes a lot of time and training data for the machine to identify these items. But with the latest developments in hardware and in-depth learning, this field of computer vision has become much simpler and more accurate. We are always looking for ways to have a 'seeing' or 'seeing' system as strong as a human being.

Weakly supervised Object localization (WSOL), has attracted a lot of attention recently. Moreover, we face this problem in a difficult situation where,

(1) Many categories of common objects are contained in a given set of images, meaning that this is a completely unchecked issue;

(2) Many or no items are contained in some of the images.

This project aims to integrate a modern acquisition process with the goal of achieving high accuracy through real-time performance. A major challenge for many visual systems is the reliance on other computer vision techniques to aid a method based on in-depth learning, leading to slow and inappropriate performance. In this project, we use an in-depth learning approach to solving the problem of acquisition in a holistic way.

In this project, we will understand what an acquisition is and look at a few different approaches one can take to solve problems in this space. After that we will be deep in building our acquisition system in Python.

2. LITERATURE SURVEY

Fares Jalled [1] proposed a article is to develop OpenCV-Python code using the Haar Cascade object and face detection algorithm. Currently, UAV are used for detection and targeted ground attack. The main effect of this type of UAV is that sometimes the object is not properly detected, which causes the object to hit the UAV. This project aims to avoid so much unwanted collisions and damage to UAVs.

Dumitru Erhan [2] presented ImageNet Large-Scale Visual Recognition Challenge (ILSVRC-2012). A deep convolutional neural networks have recently gained modernization in a number of image recognition benchmarks, including the The winning model for local underground that predicts a single binding box for each phase of the object in the image. Such a model captures the context of a complete picture next to objects but cannot handle many instances of the same object in an image without unreasonably duplicating the number of effects of each event. In this work, we propose a surprisingly inspired neural network model for discovery, predicting a set of binding boxes in the classroom and one number for each box, corresponding to its ability to contain any object of interest. The model naturally handles a dynamic number of cases for each phase and allows for the

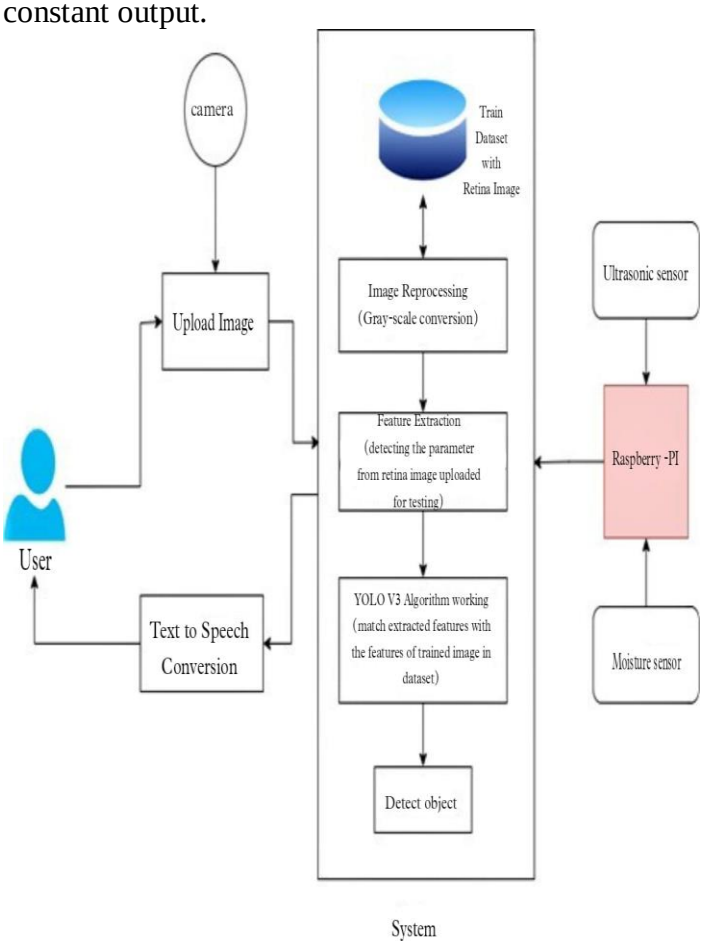
normal production of different phases at high network levels.

Xiaozhi Chen [3] invented a novel 3D discovery method that uses stereo images and contextual information for the automatic driving background. We suggest a 3D object suggestion method that overrides 2D binding boxes and is capable of producing high quality 3D binding box suggestions. We apply 3D-dimensional 3D information to a stereo camera by placing 3D candidate boxes on a low plane and locating them using 3D point-by-point features. In particular, our scoring work includes a few in-depth features such as the density of points within the candidate box, the free space, visibility, and the maximum object size and length above the ground plane. The inference process works very well as all the features can be calculated simultaneously with the important 3D images.

3. SYSTEM ARCHITECTURE:

1. Power Supply:

Power is converted from given current AC to DC. And constant flow of current is needed to fetch the constant output.



System

2. Image Processing:

How to turn a photo into a digital image and do some work on it, to get an improved image or to extract some useful information from it. It is a type of distribution signal where the input is an image, such as a video frame And result will be image or features related to it..

The image processing system usually involves handling images as two-sided signals while using the signal processing methods that are already configured.

3. Speech to Text Recognition:

Windows Speech Recognition converts your spoken words into text from your screen. Text-to-speech converter is extracted text into speech using speech synthesizer. Output synthesizer output is in audio or audio format.

The output of the speech synthesizer is amplified using a speaker and then provided with a speaker or headphones to achieve the audio signal or voice signal as output. Therefore, visually impaired people can easily hear the text as it is in the voice form.

- **Algorithm Used:**

YOLOV3 is a Convolutional Neural Network (CNN) for real-time acquisition of an object. CNN-based system-based systems can process input images such as systematic data arrays and identify patterns between them. YOLOV3 has the improvement of faster speeds than other networks and still maintains accuracy.

YOLOV3 and other algorithms of neural network algorithms "score" regions based on their similarity to the previously defined classes.

Higher scores are considered to be the best acquisition of any category closest to them. For example, in live traffic feeds, YOLOV3 can be used to find different types of vehicles depending on which video regions have the highest results compared to the previously defined categories of vehicles.

- **Raspberry Pi:**

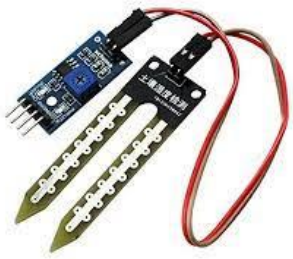
The Raspberry Pi is actually a single board computer equivalent to a credit card developed in the United Kingdom by the Raspberry Pi foundation.. This is an upgraded version of Raspberry Pi Zero, as it has a built-in Wi-Fi BCM43143 chip to deliver 802.11 wireless.

- **Ultrasonic Sensor:**

The ultrasonic sensor emits a sound pulse at the ultrasonic range. This sound is transmitted at the speed of sound in the air (about 344 meters per second) until the sound pulse strikes the object. The sound pulse jumps off the object and is pushed back to hear where this "echo" is received. By measuring the time it takes for the sound of the radio to move from the sensor to the object and return to the sensor.

- **Moisture Sensor:**

Moisture Sensor is one type of cheap electric sensor used to detect moisture. This sensor can measure the contents of a water volume. This sensor has two main components, one is Sensing Probs and the other is the Sensor Module. The probes allow the current to pass through the ground and obtain a resistance value in accordance with the amount of moisture in the soil.



4. SYSTEM FEATURES

A. Requirements of System

1. Hardware Requirement:

- System Processors : Core2Duo
- Speed : 2.4GHz
- Hard Disk : 150GB
- Rasberry pi

2. Software Requirement:

- Anaconda
- Windows OS
- Python

5. FUTURE SCOPE

The proposed whole-body tracking algorithm strongly tracks objects in successive frames. Our experiments on sample applications show that using an adjacent neighbour simulation scheme provides promising results and that no complex mechanisms are needed to track objects throughout the body. Also, in dealing with the simplification of a simple object, our histogram-based comparisons approach recognizes the identity of objects that have been successfully encrypted after separation. However, due to the heuristic nature we use, our occlusion capture algorithm will fail to distinguish closed objects if they are the same size and color. Also, in crowded squares closed closure is not possible in such a way, thus a pixel-based approach, such as optical flow is required to accurately identify segments of objects.

6. CONCLUSIONS

We propose a framework for the acquisition of common object and local practice in wild images. Like many previous methods based on the assumption that there is only one object contained in each beautiful image, Encouraged small cut / flow algorithms, and then introduced a small sub-graph mining algorithm to improve the two models.

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