

Automatic detection of objects in video surveillance using R-pi

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ABSTRACT

The project mainly focuses on the basis to implement the object detection based on its classification, which is a visual based project i.e., the input to the project will be the image data which is continuously captured with the help of a camera which is interfaced to the Raspberry Pi. It will detect the object and that object by moving the camera in the direction of the detected object. The visual data captured by the camera is processed in the Raspberry Pi and the object is detected based on the classification technique or shape and if the object is detected.

Keywords: Object Detection, Image processing, R-pi, Camera.

I.INTRODUCTION

The robot and mechanical arm give principle capacity and valuable to human laborer in industry Digital picture are more pixie in science and innovation by utilizing picture pre - handling this paper build up a y that perceive shading for sort protion. To empower the long haul following, there arevarious issues which should be tended to. The key issue is the recognition of the question when it returns in thecamera's fieldof view. This issue is exasperated by the way that the question may change its appearance consequently showing up from the underlying casing unessential. Next, a fruitful long term tracker ought to deal with scale and enlightenment changes, foundation mess, halfway impediments and work continuously. The long haul following can be drawn nearer either from following or from identification points of view. The beginning stage of our exploration is the acknowledgment of the way that neither following nor identification can illuminate the long term following undertaking freely.The

II.LITERATURE SURVEY

commitments of this paper are to show a portable automated acknowledgment of the way that neither following nor identification can illuminate the long term following undertaking freely. The commitments of this paper are to show a portable automated framework which can all the while identify a protest and maintain a strategic distance from hindrances continuously.

This model gives an overview of Raspberry Pi ARM Corte x- A53 based processor board. The main features of Raspberry Pi are Broadcom BCM2837 ARM Corte x-A 53 processors (900M Hz), 1GB RAM, on board USB 2.0 ports .Providing a wide range of processors based on a common architecture that delivers high performance and cost efficiency. To control the movement of servos, the controller

is used. Since Arduino has more number of PWM pins and it supports open source hardware, it is preferred to use Arduino has a 32-bit AtmelARMprocessor.

Sr.No	Title of paper	Abstract	Proposed approach	Year
1	Object detection and tracking using image Processing	This paper mainly focuses on the basis to implement the object detection and tracking based on its color and shape.	This paper mainly focuses on the basis to implement the object detection and tracking based on its color.	2014
2	Real Time Object Detection & Tracking System (locally and remotely) with Rotating	This paper presents an implementation of real time detection and tracking of an unknown object	Detection of a moving object is necessary for any surveillance system.	2013
3	Mobile Robot for Object Detection Using Image Processing	This paper describes a robotic application that tracks a moving object by utilizing a mobile robot with sensors and image processing.	In the majority of surveillance and videotracking systems, the sensors are stationary.	2012
4	Color Image Processing and Object Tracking System	This report describes a personal computer based system for automatic and semiautomatic tracking of objects on film or videotape.	The Tracking System achieves the automation by integrating the discrete components into a cohesive system	1996
5	Practical Applications of Robotic Hand using Image Processing	Robotichandisusedinimageprocessingour paperPresentsvariousapplicationforrobotic hand.	The robot and robotic arm provide main function and useful for human worker in industry.	2015

III.PROJECT OVERVIEW

The project mainly focuses on the basis to implement the object detection based on its classification, which is a python based project i.e. the input to the project will be the image data which is continuously captured with the help of a camera which is interfaced to the Raspberry Pi. It will detect the object and its classification category that object by moving the camera detected object. First of all the Linux O.S is installed into the Raspberry Pi board via Micro SD card and appropriate code is written in Python language for the object detection using the Open CV libraries and is dumped in the board. The visual data captured by the webcam is processed in the Raspberry Pi and the object is detected based on the colour and once if the object is detected, the camera will be pointing to that object.

The main Hardware/Software used is

- Raspberry Pi
- Image Processing

- Open CV
- Python

1. OBJECT DETECTION-

Object recognition is the undertaking of restriction of articles in an information picture. The meaning of a "question" shift. It can be a solitary occurrence or an entire class of articles. Object identification [4] is a technique to distinguish a object in a video or a photo outline. The question can be anything that is of enthusiasm for further investigation. Quantities of strategies have been created to recognize a moving object utilizing dynamic camera. Normally a moving object recognized by static camera utilizing foundation subtraction. A question [1] can be spoken to by its shape, position and appearances.

2. OPEN CV LIBRARIES-

OpenCV is released under a BSD allow and thus it's free for both academic and business use. It has C++, C, Python and Java interfaces and it supports Windows, Linux, Mac OS, iOS and Android. OpenCV was expected for computational profitability and with a strong focus on consistent applications.

Question following is the undertaking of estimation of the object movement. Trackers ordinarily expect that the question is unmistakable all through the arrangement. To track a question, numerous sort of figurings are essential e.g. object introduction, question shape, heading of object. Here we concentrate on the strategies that speak to the items by question shapes and their movement is assessed between back to back edges.

IV. PROPOSED METHODOLOGIES

1: Creation of Interfacing and connection

In this phase, parts of phase we are assembled & interfaced. This phase contain two sections, connection and interface.

(a) Connections:

In connection part we design the connection of robot means where we should place or connect the particular h/w.

(b) Interfacing:

In this section we create the interface between the hardware and s/w.

2: Programming for Object Detection

In this phase we write the program for the object detection. We develop the program in python language using open CV library.

3: Implementation of image processing

This phase comes after the programming phase. The program we create for object detection we install in raspberry pi board. For implementing image processing there are two subsections which are as follows:

(a) Objectdetection:

For detecting the object we can give the object to the bot in two ways first direct via programing, second by camera.

(b) Feature eextraction:

After detecting the object important task is feature extraction. For extracting the features the given image is change BGR to gray image. Which helps to detect the size, shape of the object.

V.SPECIFICATION

A) Project specifications

The project is mainly divided into three parts:

- Capturing images and sending them to Raspberry Pi.
- Processing the images and detecting the object using Raspberry Pi by writing appropriate code.
- Enabling the camera through the rpi board according to the processed image data.

B) Hardware requirements

- Raspberry Pi
- Camera
- Cable
- Monitor

C) Software requirements

- Windows
- Python
- Open CV

VI.RESULT

Add Screen Shot of Project.

VII.CONCLUSION

This proposed solution gives better results while compared with the earlier projects such as efficient image capture. Identification of object by using this image processing based raspberry pi.

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