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SCRUTINY MECHANISM BY RASPBIAN

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Abstract:

In small scale motor manufacturing industries, there is a problem while packing the motor or products. Sometime one company's product packed in another company pack. So the main idea of this project is to place the right product in right box. Our idea is to monitor this packing stage by keeping a camera in an adjustable mounting stand near the dispatching end of this manufacturing process. Based on industrial requirement with the help of Raspberry Pi Camera, a right product is identified, verified based on condition and has been dispatched to right node. A database of name plate details of products is created for future reference. While verifying name plate details, if any mismatch between name plate details and packing box path the notification to operator is given by a buzzer. This project will helpful for further implementation by using image processing.

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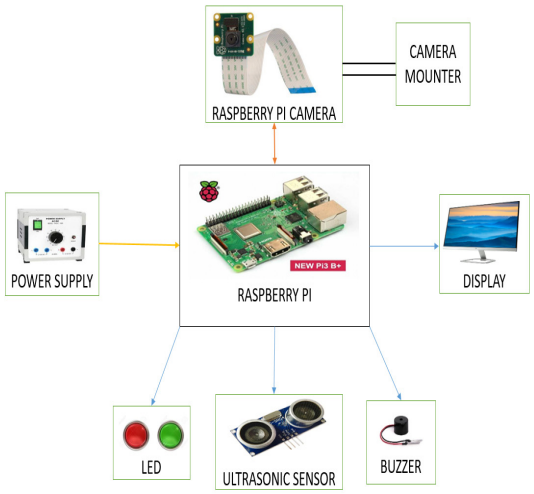
1. INTRODUCTION

The main objective of the project is to deliver right product to the customer. On dispatching the artifacts, because of human errors many consecutive faults like wrong product dispatch, faulty product dispatch are still in an existence. In this project an automation system for fault identification in dispatching artifacts has been designed, which also records the data of dispatching product. In this project, we find the fault in dispatching motor. Raspberry Pi is the main controller unit which holds all the data, Raspberry Pi Camera has been interfaced to it which captures the name plate detail of the motor. A master copy of the motor name plate details has been recorded and it has been compared with it to find the faulty product.

2. BLOCKDIAGRAM



3. APPLICATION FLOW

STEP 1:

The Pi Camera is connected to Raspberry Pi module and a reference image is taken through camera.

STEP 2:

The reference image is compared with the following images of the motor name plate details which can be found by using ultrasonic sensor.

STEP 3:

If there is difference between the reference image and the following image of motor details it is indicated by alarming buzzer and glowing LED.

STEP 4:

The display is used to display the number of motors sent and the serial numbers. The camera mounted is used to align the position of the camera.

4. Raspberry Pi

In this project we are using third generation Raspberry Pi. It is also called as secondary low power desktop. This module has Bluetooth Low Energy, 802.1 Wireless LAN and 64 bit quad core ARMv8 CPU.

5. Raspberry Pi Camera

This module can be used to time lapse, slow-motion and another video cleverness. It attaches to a 15cm ribbon cable to the CSI port on the Raspberry Pi. It can be accessed through the MMAL and V4L API.

6. Software requirement

Open Source Computer Vision (OpenCV) is a library of functions that helpful for real time applications. It is also used in facial recognition system, gesture recognition, mobile robotics and motion tracking. This software runs on variety of platforms such as Windows, Linux, macOS and Android.

6.1. Open CV

Open CV is a free library includes more API for computer vision and it is used in image processing to optimize a real time application. There are some features in Open CV which support data processing which includes object detection, camera calibration, 3D reconstruction and interface to video processing. The primary interface of Open CV written in C++ but it supports other interfaces also such as C, Python, Java and MATLAB. For Scrutiny mechanism by Raspbian project Python is used as the programming language with the required libraries from Open CV .

7. CONCLUSIONS

This project can be installed in motor industries for automation. By using this project the viewer can check the fault only when it indicates the wrong packing. So there is no need of continuous monitoring. This project can be further developed in huge industries for automation (checking).

This work is in progress to use a subset or all of the features combined with texture statistical features in order to successfully detect and classify the defects for a sample of a very large number of high-quality images. We hope that this project would be useful for newcomer in the area of defects in packaging.

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