AUTOMATION OF COLOR OBJECT SORTING CONVEYOR BELT

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ABSTRACT – The main objective of the project is to find the color of an object based on its color and kept for pick and place purposes, the robotic arm's is used. Robotic arm's are one of the most important areas in today's world. A robotic arm controlled by ARDUINO UNO and using servo motor it is created. With the help of color sensor, detects the color of the object, the robotic arm places it in an equivalent position. The most important advantage of using a robotic arm is increasing efficiency, increasing productivity and accuracy. Come on in the project, the system sort a cube of three different colors. Using light intensity to frequency converter method a specific color is recognized. On the conveyor belt object travel from start position to end position with help of conveyor belt. Conveyor belt are used to reduce the time required to transport materials and increase productivity.

Keywords— Robotic Arm, Conveyer Belt, Color Sensor, Servo motor, DC Motor

1.   INTRODUCTION

Sorting of project is everywhere used in many industries like food processing industries, toy industries, etc. ensure the quality of the product is up to the mark. This Process is simplified by using automation. Automation refers to the use of restraint systems such as computers or robots to replace humans in handling various processes and machinery and providing mechanical assistance. This not only reduces manual efforts, but also reduces time. Allows more time for marketing, but avoids the danger that can occur when humans work in hazardous environments. There produce need to sort object in manufacturing industries. The object may be of similar or dissimilar types. This system should be detect the objects and than sorting the objects on their properties. Object may have different colors. The object have different color and shape. Our aim is to classify objects using different colors.
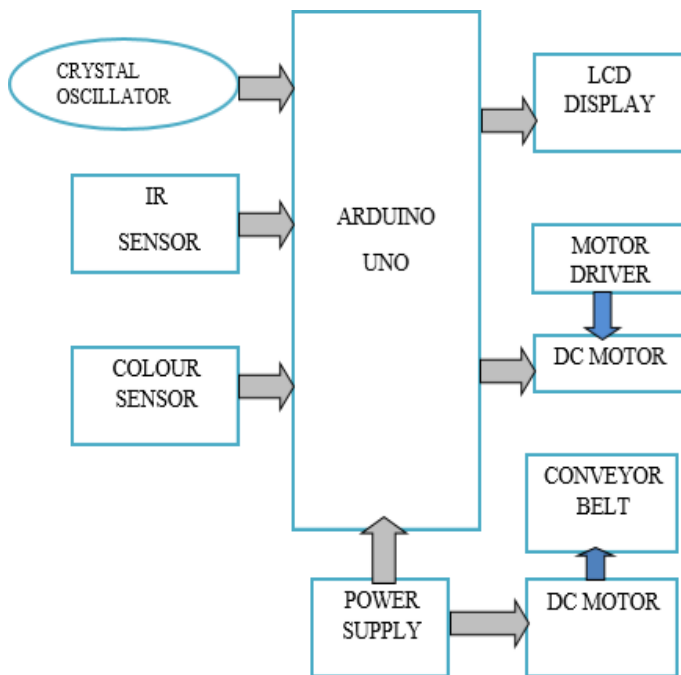
2.   LITERATURE SURVEY

This contain present the critical analysis of the existing literature which is relent to the orange sorting system through the literature consist of IoT mini research contribution. But here, we have analysis sum of the research and review paper finally the finding of summarized data to scanned and analyzed research paper.

In their paper explain about color sorting report robot this type exists of color sensor model zero motor coordination no and LCD display TCS 3200 is the color sensor which detects light reflected light by an object. According to the color detected servo motor used to move slider.

Input and output operation control by Arduino. Detected color and the count value of colored object is displayed on LCD. In their paper stated that the complete architecture of object sorting using color sensor and Arduino. color sensor detect the color this gives serial output of RGB value of the Arduino.
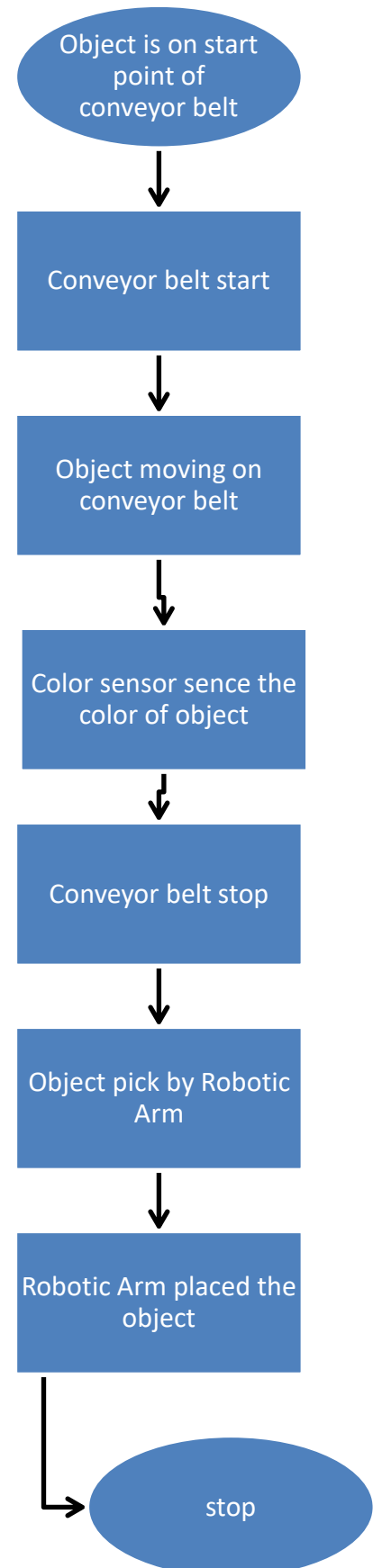
3. BLOCK DIAGRAM

3.1 Working:

This project aims to understand ARDUINO UNO color sensor interface and how we can make color detection application using Arduino Uno and TCS3200 color sensor.

According to the block diagram, objects are sorted based on color. To detect the color of an object, a color detection circuit with a color sensor is used. Arduino UNO will be used as a controlling device to perform various activities by making appropriate decisions.

When we are sorting the object we will need mechanical mechanism using servo motor and conveyor belt to sort the object. First with the help of the color sensor the object will be sorted based on its color. In this project we used color sensor is TCS3200. It detects color of the object and gives a specific code to the Arduino UNO. Arduino UNO compares the code with the stored data and the specified output corresponding to the input. Will finally command the controller mechanical assembly to place the object in the specific location.

4. FLOW CHART

5. METHODOLOGY

The pick and place robotic arm is mechatronics system that detect the object on the conveyor belt, pick that object from conveyor belt and place at respective location. IR sensor are used to detect presence of object as a transmitter to receiver path for interrupted by placed object. Robotic arm receives the signal from the controller pics it with end effectors and place it on the respective location depending on the respective color object that is read, green, blue. After sensing object and its color robotic arm place them accordingly of conveyor belt. if another object causes interrupt, it again does the same job.

Fig.5. Robotic Arm

6. HARDWARE DESCRIPTION

This section describes about the hardware component used in this project.

6.1 CONVEYOR BELT

In this project conveyor belt is used to transfer the object one end to another end in the sorting mechanism. One of the wheel is powered by DC Motor. The material forward on the belt when moving the belt.

6.2 COLOR SENSOR

The color sensor is a complete color detector. We can use TCS3200 colored sensor chip. It can detect and measure nearby limitless range of visible colors to a certain degree. Connect the color sensor to the Arduino through the mail / female wires. The same server taking 3 different reading indicating the 3 primary colors. RGB LED accept value bet 0and255. This is the example to read red color, repeat the above steps changing the state of green and blue we get the color output through RGB led.

6.3 LCD

An LCD screen is mounted on the robot to display the color of the object which is moving on the conveyor belt. and also display the number of sorted object.

7. CONCLUSIONS

 Nowadays more competition occurs in industrial manufacturing, suddenly the management of first stage to the last stage of manufacturing is of very important and industrious and the sorting of objects is learning process. So these objects sorting object is an excellent one because of its working and simplicity please stop by using the idea of this project is an industry can be solved easily because the required product according to color.

8. APPLICATION

1. Agriculture Field

    An important application in this field we can used for sort the different agriculture product like almonds, grapes and many more.

2. Industry

    It can used for various object sorting with high degree of quality and accuracy with automation.

3. Human can't detect all colour fast and in case of human being the accuracy is less, therefore we can use this system for sorting objects.

4. Pharmaceutical

9. FUTURE SCOPE

1. Using hardware and software we sense all colour by color sensor and sorted more object.

2. For pick and place the object we can use Robotic arm.

3. We can use this system as a quality controller by adding another sensor.

4. We can use the counter for count the number of objects.

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