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A Review on Arduino Based Color Sorting Machine

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Abstract: ***In this digital world, color processing in different industries gives us more leverage to solve the consistency problem of continuous manual sorting. This document will be a new approach to continuously detect and classify objects and keep them in a specific place. Color processing attracts a lot of attention since the help of modern technology leads to the possibility of expanding the scope of its application in various areas. The Arduino Nano microcontroller, TCS3200 colour sensor, servo motor, and other electronic components are used to study, develop, and build a colour sorter. This work involves sensors that detect the color of the object and send the signal to the Arduino.***
The microcontroller sends a signal to the circuitry that drives the various motors to activate the object and place it in the specified location. Based on the detection, everything moves to the specified position releases the object, and returns to the original position. The system is able to quickly classify the object based on its color at the respective color station. Sorting objects is an essentially mechanical process that requires difficult work. The chronically manual layout leads to consistency problems. Above all, machines can do boring tasks that humans are superior to. Worker burnout in sequential production structures can lead to reduced execution and purpose issues in maintaining the object. Recognize the color of the article but in no way a machine. In this article, a compact registration near the arrangement of items based on color was implemented using the TCS3200 color sensor with servo motors in conjunction with Arduino Nano.
Keywords: Automation TCS3200, Arduino Nano, Servo Motor.

I. INTRODUCTION

In the state-of-the-art phase of competitive manufacturing in the business space, manufacturing performance has the important component for performance. Your miles are essential to accelerating the pace of manufacturing, reducing labour costs and reducing production equipment downtime. Goods must be looked after numerous manual production and sorting series are time-consuming and labour-intensive.

This document discusses the automatic classification tool that helps the classification mechanism to classify based on coloration. The TCS3200 color sensor was used for detection. With the help of the frequency readout of the sensor output, the absolute classification by color is completed. The main goal was to develop an innovative project called Article Classification System by recognizing the unique hues of the article. The challenge. Collect the objects in the hopper and distribute them in their exact area based on their coloring, even if they will be unique in coloring. Many painting environments do not lend themselves to manual sorting and some areas are hazardous to humans. Painting on. Therefore, to avoid unstable work, time consumption and sharp colors, capture 22 situations.

This prototype is as a simple digital gadget as a microcontroller for processing, servomotors for actions and a dyeing sensor to detect exclusive color devices. This document discusses the automatic classification tool that helps the classification mechanism to classify based on coloration.

The TCS3200 color sensor was used for detection. Using the readings of the sensor output frequency, the absolute classification based mainly on color is completed. The main aim of the challenge was to develop an innovative enterprise known as an item classification system by recognizing the item's unique hues. Gathering the items from the hopper and distributing them to their exact area based on their coloring will even be unique to coloring. To reduce the human effort involved in mechanical manoeuvres, different types of sorting machines are being developed. These machines are too expensive due to the complexity of the manufacturing process.

A common requirement in color correction is color detection and identification. Many painting environments do not lend themselves to manual sorting and some areas are hazardous to people painting. Therefore, to avoid unstable work, time consumption and sharp colors, capture 22 situations. This project consists of a colours ball sorting machine with action of microcontroller and servo motors.

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II. LITERATURE SURVEY

We have studied this following refrences and get targeted expertise about the work, and additionally talk about some of them to analyze matters which required in this paper.

1) *Arduino Based Lemon Sorter Machine (Ajay H. Chauhan, Neema Ukani, Pratik V. Yennewar, Sandeep Sonaskar, Nilakshi Hiwanj, Saurabh Chakole) 2021.*

In This paper they are sorting the lemons using the sensor. All over the world, the demand for automation is increasing sharply in industry. Arranging objects according to their color tone is a very problematic task. This document gives us an idea on the selection of fruits according to their color palette. “Here in this paper they design and implement an efficient color sorter using the TCS3200 color sensor based on Arduino NANO. This design provides best or more accuracy, performance and repeatability”. Easy to use and build, reducing human error, human effort, and industry expense [1].

2) *Arduino Based Color Sorting Machine (N. Monika, C.R. Pramod , B.S. Vinod)- 2020.*

There is a wide range of many products in our daily life, and the manufacture of these products occurs in many large and small industries. The organization makes quality a consistent theme. Too many items to sort. Organizing elements in an industry is a tedious process that is usually done physically.

However, classifying items by physical methods is more time-consuming. To save time and be accurate in sorting, we introduce automatic color sorting machine. Color sorter is a device that sorts the object by its color. We use the TCS3200 color sensor to detect the color of any object and after detecting the color. The servo motor rotates and according to mechanism the object will be allocated to particular box. They can be used in a variety of applications where color discrimination and color classification is important. Some of the application areas are agribusiness (color sorting of grain), food industry, diamond and mining industry, recycling, etc [2].

3) *Automatic Color Sorting Machine Using Arduino Mega Microcontroller (Aye Myat Myat Myo , Zar Chi Soe)-2019.*

The paper describe system can work with success and classify the thing by its color. the colour sorting machine may be a good color sorter that may acknowledge RGB color balls and Drop the balls within the right place”. There are classifiers that use PIC microcontrollers however cannot. Several are often simply created exploitation Arduino programming. “The real contribution of this technique is that it can cut back the time needed for color sorting, creating this system a lot of economical than the present one”. This sorter not solely reduces the manual effort but conjointly the time required. , but also forestall color blind individuals from selecting the wrong color and being unable to settle on the proper color [3].

4) *Arduino Based Color Sorting Machine using TCS3200 Color Sensor (Ch. Shravani, G. Indira, V. Appalaraju)- 2019.*

Sorting objects is an essentially mechanical process that requires hard work. Chronic manual organization leads to consistency problems. Above all, machines can do boring tasks that humans are superior to. Worker burnout in sequential manufacturing structures can lead to reduced execution and purpose issues when it comes to holding the object well. An employee who has repeatedly researched may eventually forget to recognize the color of the article, but not a machine. This document was used near the organization of elements that is fully used on shading based on the shading of the TCS3200 shading sensor associated with servomotors associated with Arduino [4].

5) *Design And Development Of Colour Sorting Robot (Lim Jie Shen, Irda Hassan)-2015.*

In this method, the first step begins with the background material study, after the background study is completed, the next very important classification color detection connection, color recognition connection , the manufacturing of the robot body after the following steps have the construction of the assembly parts is very important, and the troubleshooting analysis is carried out in the last part.

In the programming section, the basic study of a programming language is done by comparing various other methods, in this work it usually focuses on the TCS3200D color sensor for sorting different colors, the Arduino UNO board is used for control operations and GS90 Tower Servomotor Pro used in the conveyor to sort different colors. In this work, the robotic system will have enormous potential for successful implementation [5].

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III.METHODOLOGY

The goal of this document is to understand the interface with the Arduino Nano color sensor and how we can create a color detection application using the Arduino Nano and the TCS3200 color sensor. For the given block diagram, the objects are sorted by color. To detect the color of the object, color detection circuitry is used in conjunction with a color sensor. The Arduino nano is used as a control device to carry out various activities by making appropriate decisions. As we classify the object, we need a mechanical mechanism to classify the object. Object with servomotor and conveyor belt. First, the object is classified based on its color using a color sensor. The color sensor used in this project is TCS3200. It detects the color of the object and gives the Arduino nano a specific code number. Arduino nano compares the code to the stored data and provides a specific output related to the input. Finally, the controller gives the command to the mechanical assembly to place the object at the specified location.

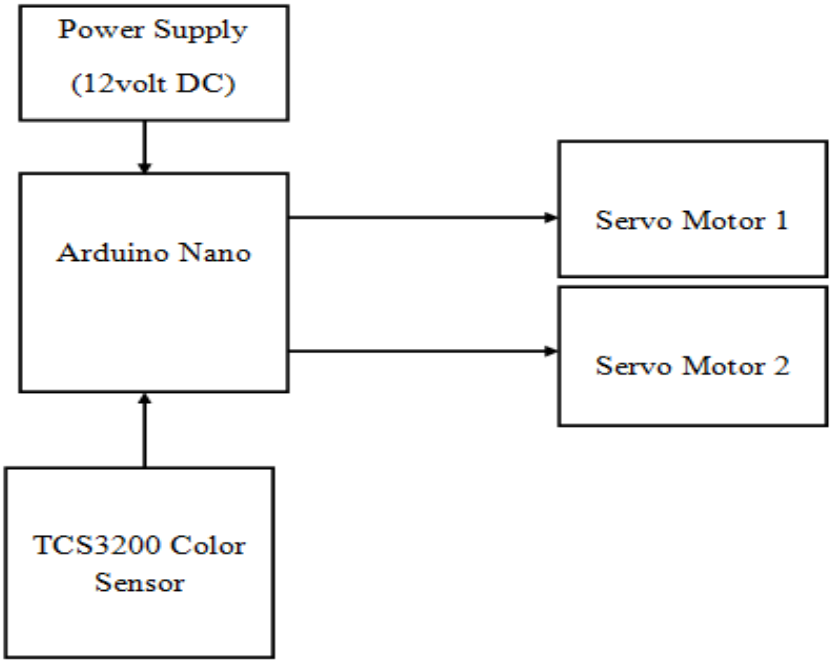


Fig 1: Block diagram of color sorting machine

IV.CONCLUSION

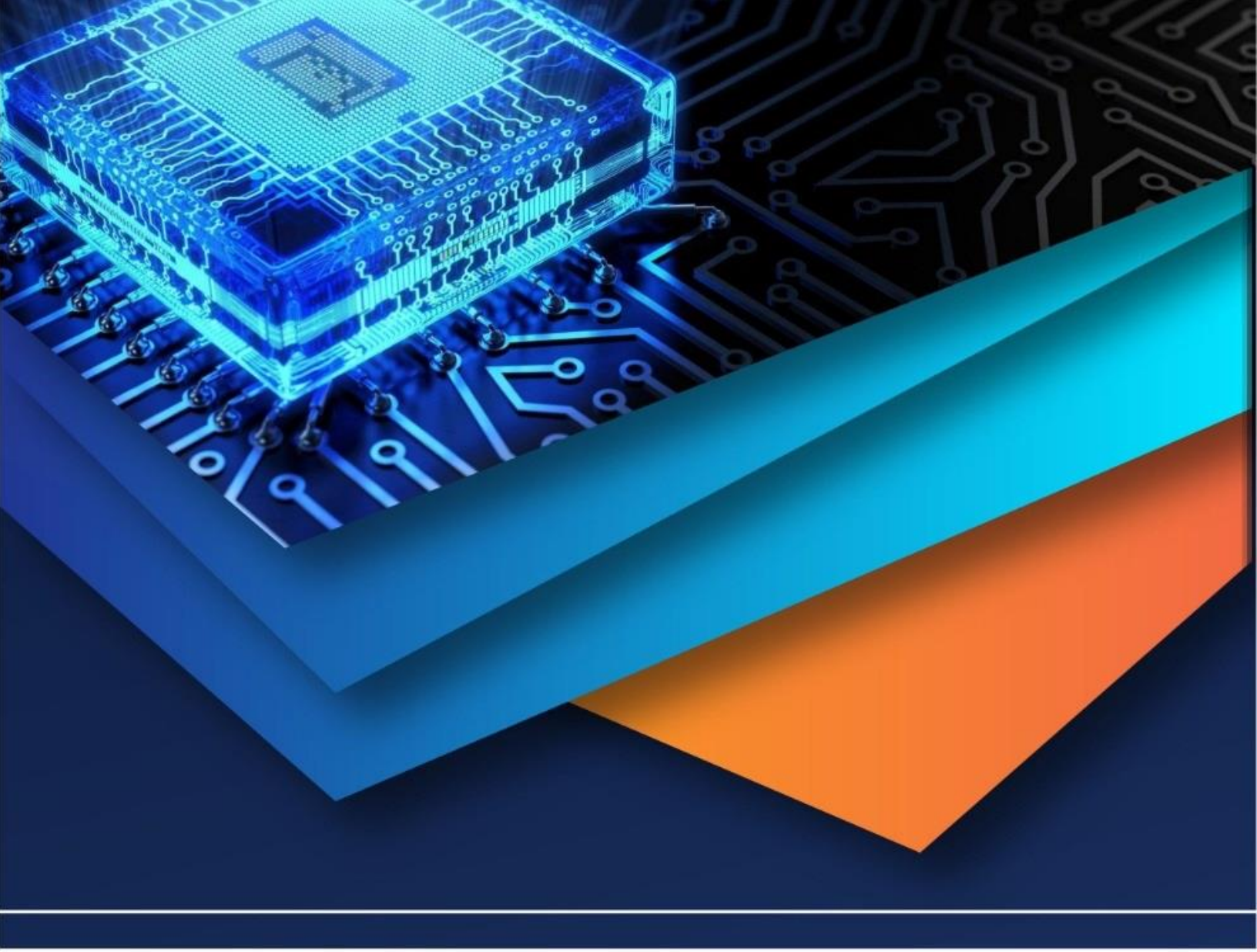
In this paper we have studied about the different types of research paper based on the color sorting machine or mechanism. The comparing technologic used in the project. The TCS3200 color sensor is the best sensor for color sensing and we are built the color sorting machine using arduino nano.

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