



Automatic Colour Sorting Machine Using TCS230 & Arduino Nano

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ABSTRACT

The purpose of this model is to design & implement a system which automatically separates products based on their colors. This machine consists of three parts: color sensor, Arduino Nano & servo motor. It performs highly repetitive tasks. Purpose of this model is separation of products. Sorting of products is very difficult industrial process. Continuous manual sorting creates consistency issues. This paper describes a working prototype designed for automatic sorting of objects based on the color. TCS230 sensor was used to detect the color of product and Arduino Nano is used to control the overall process. The identification of color is based on the frequency analysis of the output of TCS230 sensor. It helps to provide higher production & precise quality in the field automation.

1. Introduction

Machines can perform highly repetitive tasks better than humans. Worker fatigue on assembly lines can result in reduced performance, & cause challenges in maintaining product quality. An employee who has been performing an inspection task over & over again may eventually fail to recognize the colour of product. Automating mainly of the tasks in the industries may help to improve the efficiency of manufacturing system.

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To reduce human efforts on mechanical manoeuvring different types of sorting machines are being developed. These machines are too costly due to the complexity in the fabrication process. A common requirement in the field of colour sorting is that of the colour sensing and identification.

2 HARDWARE USED

1. Arduino Uno
2. Power supply
3. TCS230 color sensor
4. Dc motor
5. Servo motor

3 Working

When we give 5V power supply then model will be start. When we give any colour object to the model they sense the colour with using TCS230 colour sensor. When we give any colour object to the colour sorter machine then machine will take the object. The colour sensor sense the colour of the object then Arduino Nano will perform this process then servo motor will separate the object. Each of the 14 digital pins on the Nano can be used as an input or output, using pinMode(), digitalWrite(), and digitalRead() functions. They operate at 5 volts. Each pin can provide or receive a maximum of 40 mA and has an internal pull-up resistor (disconnected by default) of 20-50 kOhms. In addition, some pins have specialized functions.

4 Literature Survey

. This isn't a special idea, for the execution of object sorting machine based on colour, size, weight, etc. The idea has existed for quite a while, after there has been advancement in technology. 2. Design and Development of Colour Sorting Robot Lim Jie Shen, Irda Hassan –This gave us the knowledge of how a

robot is used for the sorting process and no manual help or labor was needed. 3. Automated Object Sorting Using Raspberry Pi N. Aarthi1, P. Sahithi2, P. V. Sitaramaih, M. InduVardhani, N. Ranjith Kumar, D. Suneel Varma –This published work gave different ideas in which this sorting mechanism can be taken into consideration. 4. Sorting Of Objects Based On Colour, Weight And Type On A Conveyor Line Using PLC, S. V. Rout, A. P. Shinde, N. R. Darda, A, V.Vaghule, C, B.Meshram, S. S. Sarawade –their gave us the knowledge of how different sensors are responsible and helpful for the sorting based on weight, colour and metal.

5 Scope of Project

- We can sense the large numbers of color by sensor and sorted more objects using extra hardware and software assembly.
- We can use a robotic arm to pick and place the object.
- By using counter we can count the number of objects
- Speed of the system can be increased accounting to the speed of production.
- ?The system can be used as a quality controller by adding more sensors

6 Methodology

The servo motor is a small and effective motor and it can be used in some serious applications like precise position control. The controlling of this motor can be done with a PWM (pulse width modulator) signal. The applications of these motors mainly include in industrial robotics, computers, toys, CD/DVD player

Algorithm for arduino code

1. Start
2. Light is flashed on object
3. Coloure sensor sence the coloureArduino nano will seprate the coloure
4. Project will be satisfied
5. Stop

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Conclusion

- On the component even as any object of hues, as an instance, crimson, green, Blue is stored near the sensor, the shading LED of the comparing kind is growing to grow to be on giving the yield of the sensor.
- Inexperienced shading is tried on the begin and pursued through different

References

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