



Society For Computer Technology & Research's
Pune Institute of Computer Technology
Department of Electronics & Telecommunications Engineering
TE Mini project

AY:2022-23

Title: Colour and Weight Based
Sorting Model

Abstract

- Wide use of sorting mechanisms in industries.
 - Recycling plants: They sort materials based on types, size and weight.
 - Manufacturing industries: They sort products based on defects or quality control criteria and ensure good product delivery.
- Contribute to industries like toys industries, food and beverages processing industries etc.
- Will feature sorting based on parameters:
 - Colour
 - Weight

Problem Statement

- To design a sorting mechanism to sort objects based on colour and weight.

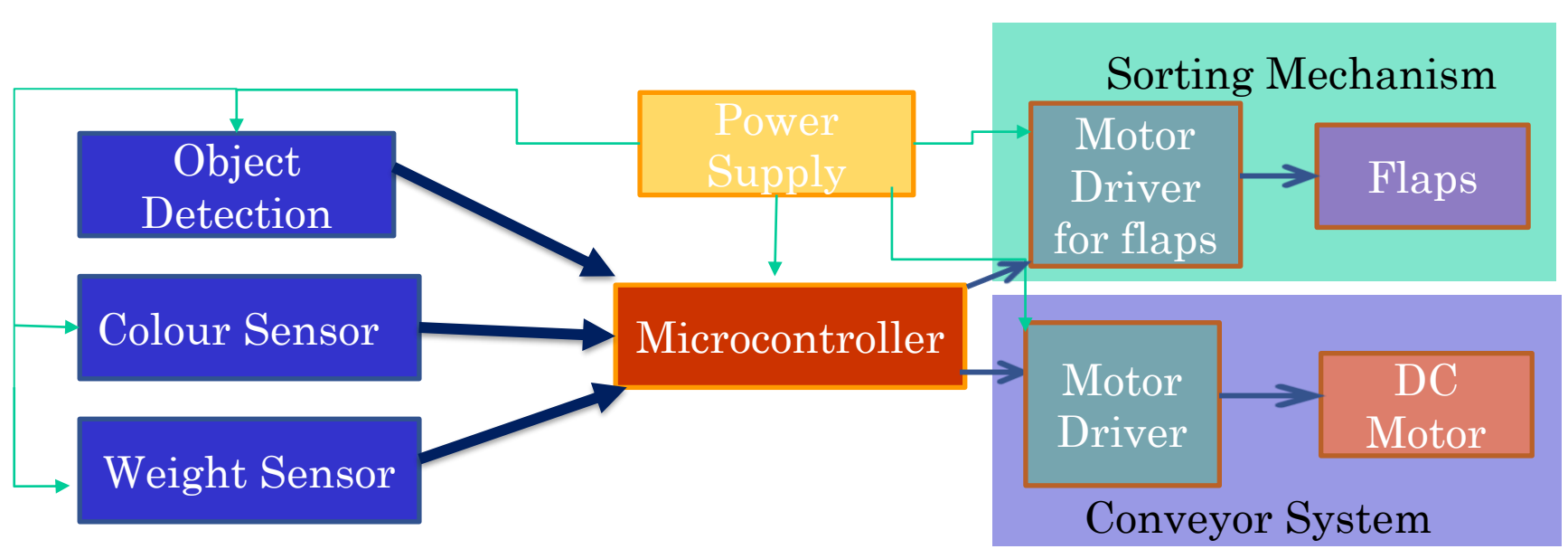
Objectives of Work

- To study existing sorting techniques.
- To develop a conveyor belt for the model using various motors.
- To implement and verify the designed sorting system.

Methodology

- Sorting Using Conveyor
- Object detection using IR Sensor to stop the conveyor.
- Detect color and determine state of limit switch.
- Flaps adjust accordingly
- Conveyor restarts and object goes into it's designated bin.

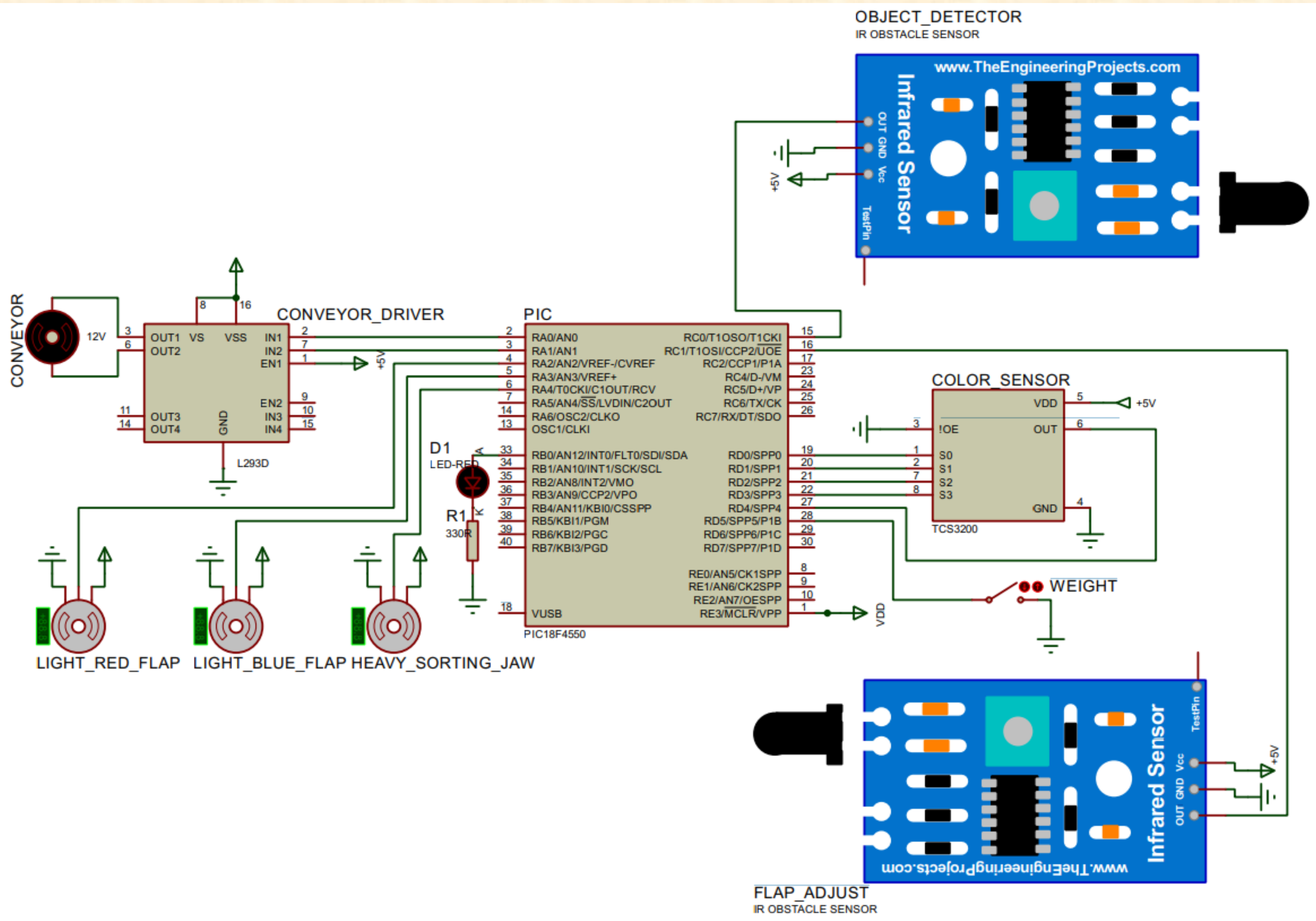
Experimental Set up, if any



Important Results (Tables or Figures)

Feature	TCS3200 Colour Sensor	IR Sensor
Operating Principle	RGB light detection	Infrared radiation detection
Detection Range	400nm to 700nm (visible light spectrum)	700nm to 1mm (infrared spectrum)
Output	16-bit digital value	Analog voltage proportional to detected radiation
Sensitivity	Can distinguish between 16 million colors	Sensitive to a wide range of infrared wavelengths
Applications	Color detection in products, sorting, and imaging	Distance sensing, object detection, line tracking, and motion detection

Important Results



References

- S. Huang and S. S. Zhang, "Design and Control of a Conveyor-Based Sorting System," in IEEE Transactions on Automation Science and Engineering, vol. 10, no. 3, pp. 728-736, July 2013, doi: 10.1109/TASE.2012.2236971.
- N. S. A. Ali, A. R. A. Rahman, A. F. M. Asib and A. F. M. Hidayatullah, "Design and Development of Conveyor Sorting Mechanism for Industrial Applications," in 2018 IEEE Conference on Sustainable Utilization and Development in Engineering and Technology (CSUDET), Kuala Lumpur, Malaysia, 2018, pp. 1-5, doi: 10.1109/CSUDET.2018.8644758.

Conclusions

The model will help us sort the objects based on color and its weight. It will use the color sensor and two IR sensors. The model will consist of a four-way sorting mechanism which will be implemented by two servo motor driven flaps and a bidirectional moving gear. The model will be using a single belt conveyor. This model can be utilized in sorting small objects like toys and bottles.

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