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Smart Conveyor Belt System

Sumit Singh[1], Roshani Dumbhare[2], Shivali Pandit[3], Mayur Kathade[4], Pankaj Meshram[5]

[1, 2, 3, 4, 5] Department of Electronics & Telecommunication, Yeshwantrao Chavan College of Engineering, Nagpur, Maharashtra, India

Abstract: In this paper certain modifications have been made to get the immediate response from the system when there is an uncertainty occurs that is it acquired data from the controller and then take the decision according to it and because of that productivity can be improved up to a certain extent. In the ongoing process suddenly the belt gets displaced when there is overloading of belt occurs Because of heavily placed material which is kept on the top of the belt and depending upon that the belt gets managed itself and came to its predetermined point when it gets deviated from its position. So by adding this forward-looking functionality into the system which makes us system smart and can make a decision depending upon the ongoing condition.

Keywords: Component, Formatting, Style, Insert

I. INTRODUCTION

The technology which is already had been used is only suitable for color detection and sorting mechanism but now one extra essence has been submerged into the system for extra flavour so that the whole process runs with proper synchronism. Actually, we somewhat witting about the term which is cordially related as per industry is concern that is quality and control is the main objective of any industry and it also associated with boost productivity so when this three footing comes to a common platform it contributes to a profit. So by attaining this lineament, we have to enforce certain methods that gave rise to perfect execution..

This method acting as a crucial component in the whole outgrowth that is starting from raw material to final result according to this method the transporting of material from one end to far end is become more comfortable, lenient and time consuming this is all related to "smart conveyor belt system" not only this benefit we acquire but also one more future-oriented technology is getting stick into the system it deals with when there is mismatch occurs between the belt and the roller in which the belt is attached and get synchronized but due to strain associated with the object gets the belt to pull down from its position and because of that it gets misplaced from its location and this incident gets analysed by the controller and depending upon that it tries to pull the belt into its pre-defined point.

So by incorporating this idea, we reduce the possibility of damage due to off-tracking the belt during the running process in the industry and we achieve a fast and accurate result with a specified time duration.

II. RELATED WORK

As proposed earlier a model on colour sensor based object sorting robot using Embedded System. [1]This research presents an application to sort coloured objects with a robotic arm. They have a robotic arm which picks different coloured object or items and sorts them by placing them in different cups. [2]A light intensity to frequency converter method is used for detection of a particular color. Using a flipper mechanism the system then rejects and discards the items that are not of desired characteristics by pushing them out of the conveyor line. [5]A circular container which has three partitions is used to collect objects of three different colours. Two conveyor belts were used, each controlled by separate DC motors.

The first belt is for placing the product to be analysed by the load cell and inductive sensor, which also contains a colour sensor at the end for one type of segregated object and the second belt also, has a colour sensor for the components that are separated by inductive sensor and the load cell. We have recreated the above model using a temperature sensor to determine the off-tracking of a belt Methodology.

III. PROBLEM DEFINITION

To design a smart conveyor belt system that is well suited for reacting against temperature variations due to off-tracking the belt through its original position and the threshold limit of temperature will be set, based on their working zone and area of operation. once it reaches its set point then the belt will automatically get stop by which we can avoid terrible detriment at the industry.

IV. BLOCK DIAGRAM DESCRIPTION
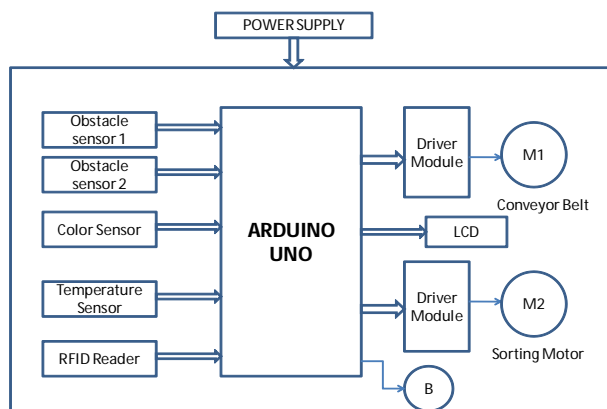
The Figure shows the basic block diagram of the smart conveyor belt system. It consists of various components that are used to track the system. The vital element of this system is Arduino which is used to send control signal and depending upon this it may monitor the system .so when the object is placed on the conveyor the object goes into three different processes the first step is to detect the exact location of the object to where it from and where to go with the help of RFID Reader and 1KB of Chip in which the information is stored for individual object and this allows to avoid the mixing of multiple signals which is come from different devices and the second process is to identify the colour shape and size of the object with the help of colour sensor it utilizes three different colour red, blue and green with different wavelength of operation so while sorting it becomes easier and depending upon that manual work is reduced to a greater extent. The final process is to provide proper orientation with the help of servo motor and this motor provided the different angle of rotation for placing the objects to its accurate position so that the object gets placed automatically to its predetermined point.

V. METHODOLOGY

This system comprises of Software controlled hardware materials incorporated in the design for proper functioning.Atmega328 will be used in this project to monitor every single process during operation. It controls all over operations of the conveyor belt by sending a control signal for getting stop if sensors acquire its appropriate desire point. It associated with the LM-35 Temperature sensor is attached for reporting if an accidental belt getting off-track .This model also associated with some of the advanced emerging technologies which are well suited for the industry to reduce manual working. It uses RFID module to demonstrate the sorting of product or material in an industry that it is used to arrange the materials with their specified location by detecting their size, colour, and shape so it seems to be more effective way of sorting the product depending upon the tag which is attached on either side of the object. The specialty of the tag is to store 1kb of information with it in encrypted form so that its difficult to decode it and it also uses a line of sight orientation to detect the object in any of the specified directions. So by allocating all these into a common platform, we get relief from the system and we make the process runs smoothly and efficiently by considering all the parameter taken into account.

A. Circuit Diagram
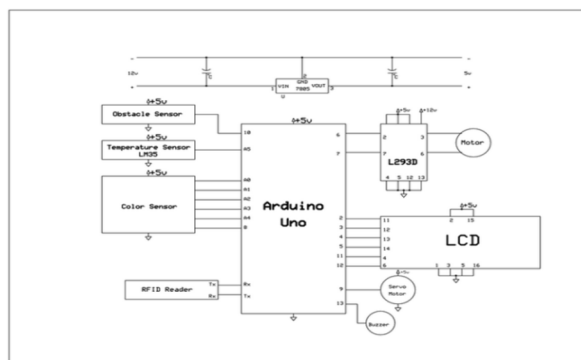
B. Flow Chart
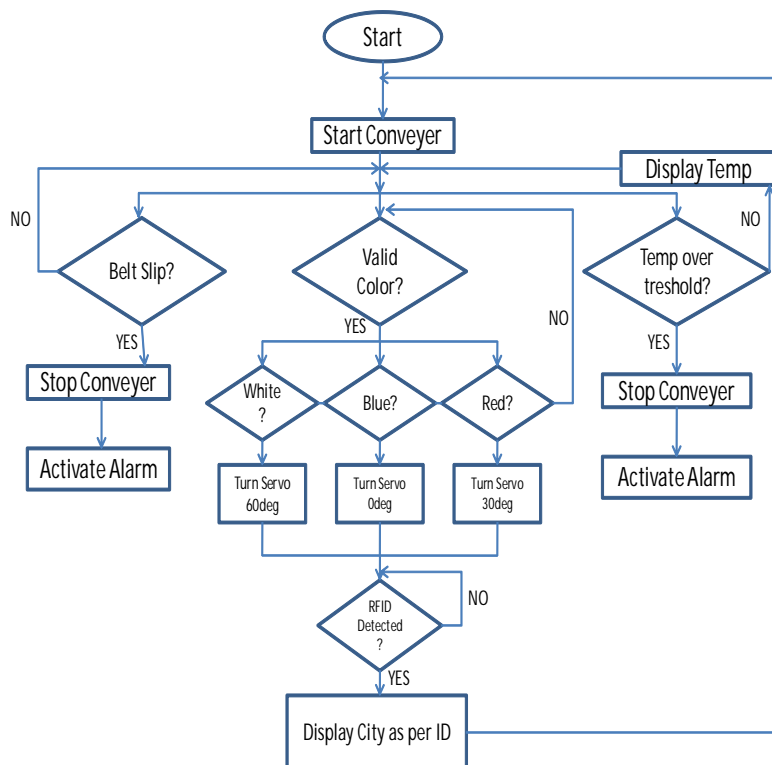
VI. **RESULT**

A. Initial Temperature

B. Temperature Rises Due To Heat

C. *Sorting Based On Destinations*

VII. CONCLUSION

By implementing this kind of technique the industry can suffers a minimum amount of loss and hence increase in productivity with the high demand of products and also this system associated with one everlasting protection against the off-tracking of the belt the future-oriented incidents which may give rise to high damage it will automatically warn by the system and simultaneously take necessary actions upon it by considering the conditions of the device. This technology provides a forward-looking approach so that the workload can be eliminated and 24x7 monitoring is provided by the system.

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