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Conveyor-Belt Based Sort Industrial Robotics Application

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ABSTRACT: The Project deals with an automatic material handling system. It coordinates the movement of servo to place the items moving on the conveyor belts. It aims in organizing the colored objects which are approaching on the conveyor by separating the objects in its separate located place. Thereby reducing the tedious work done by humans, accomplishing accuracy and rapidity in the work. The project includes color sensors that sense the item's color and lead the signal to the controller. The microcontroller guides the signal to the motor driving circuit which drives the motors of the conveyor belt to grasp the object and place it in the correct location. Depending upon the color sensed the corresponding servo will throw the object to the correct location and come back to the normal potion.

I. INTRODUCTION

The development of production industries is dependent upon research in manufacturing process and innovation in new products as well as automation. Today all over the industry follows new innovative ideas, techniques, methods etc. hence resulting in growth of production industry and manufacturing industries. During processing raw material is transported for the produced product and gives it new shape, size and value. The price of the finished product is more than raw material because so many operations are performed on the raw material to give it a desert shape and size with less consumption of time. In recent days the manufacturing industry manufactures products with different color, size, shape and height. In the old days it was possible to implement manual labor for sorting similar objects. but nowadays due to increased production and for minimizing the labor expenditure for such unskilled task, industries can't afford human errors for sorting these products as well as new technology every company need high production rate so that it will produce similar size in shape, height and color its helps to production rate but during the transportation system it follow difficulty during counting the finish product , sorting product according to color and pic and place .This reasons behind every company replace there company in atomize and give it new looks with less error in production and increase its profit. An economic factor is the most considerable factor in industries so it's necessary to develop low-cost management during automation set up hence this system is most beneficial to the economy.

II. METHODOLGY

Objects which are to be separated are fed in tubes. A color sensor is used to detect the object colors and based on colors the servo will act and through the object into the corresponding tub. Firstly we will place object on the belt when the IR Sensor detects the objects then only the conveyor belt starts moving and detects the colour using color sensor. Based on the colour detected the servo corresponding to that color will rotate and throw the object into it's tube.

Embedded System Hardware: As with any electronic system, an embedded system requires a hardware platform on which it performs the operation. Embedded system hardware is built with a microprocessor or microcontroller. The embedded system hardware has elements like input output (I/O) interfaces, user interface, memory, and the display.

Embedded System Software : The embedded system software is written to perform a specific function. It is typically written in a high-level format and then compiled down to provide code that can be lodged within a non-volatile memory within the hardware. An embedded system software is designed to keep in view of the three limits:
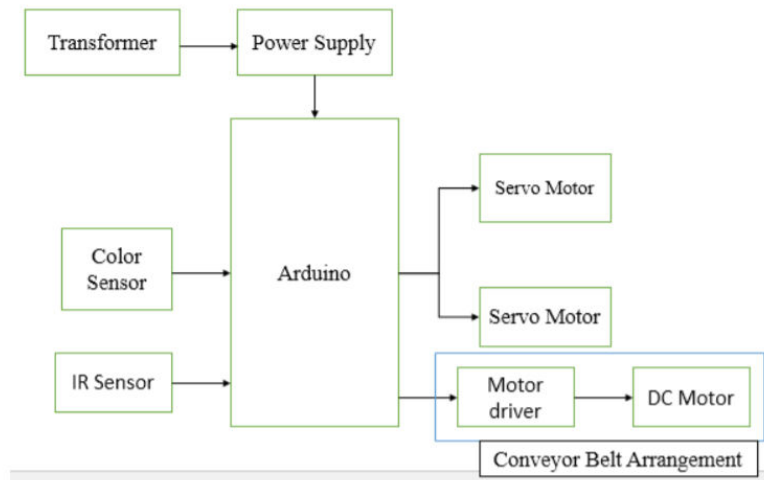
FIG 2.1 : BLOCK DIAGRAM

- **Working of the project:**

Here in this work we have designed a Conveyor belt mechanism to sort the objects based on colors. We have used one conveyor belt which is rotated by one dc gear motor. After that we have used of IR sensor for detecting objects to move conveyor belt when object reaches pickup position and then signal from color sensor is processed in microcontroller which further controls servo Motor. Whole work is done on principle of sensor and microcontroller feedback system.

IMPLEMENTAION FLOW:
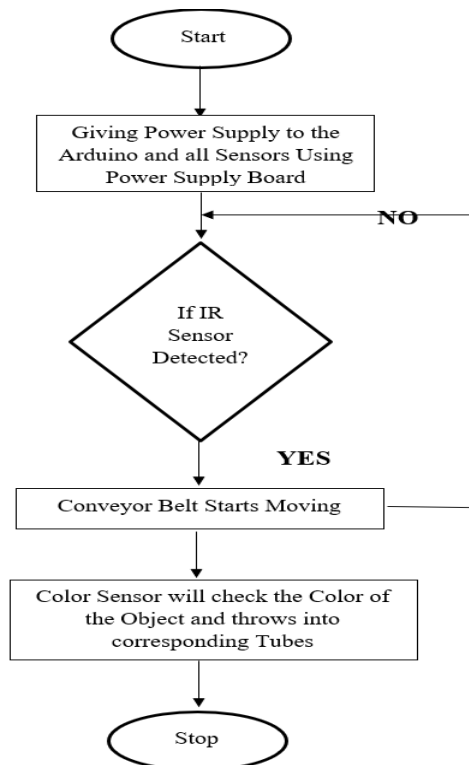
STEP 1 :- Provide the power supply to the Arduino and all sensors using the power supply board
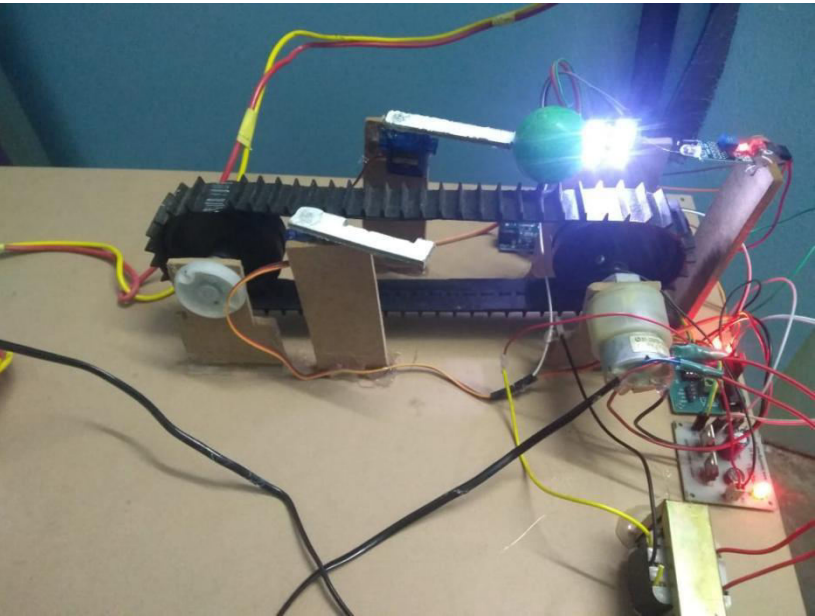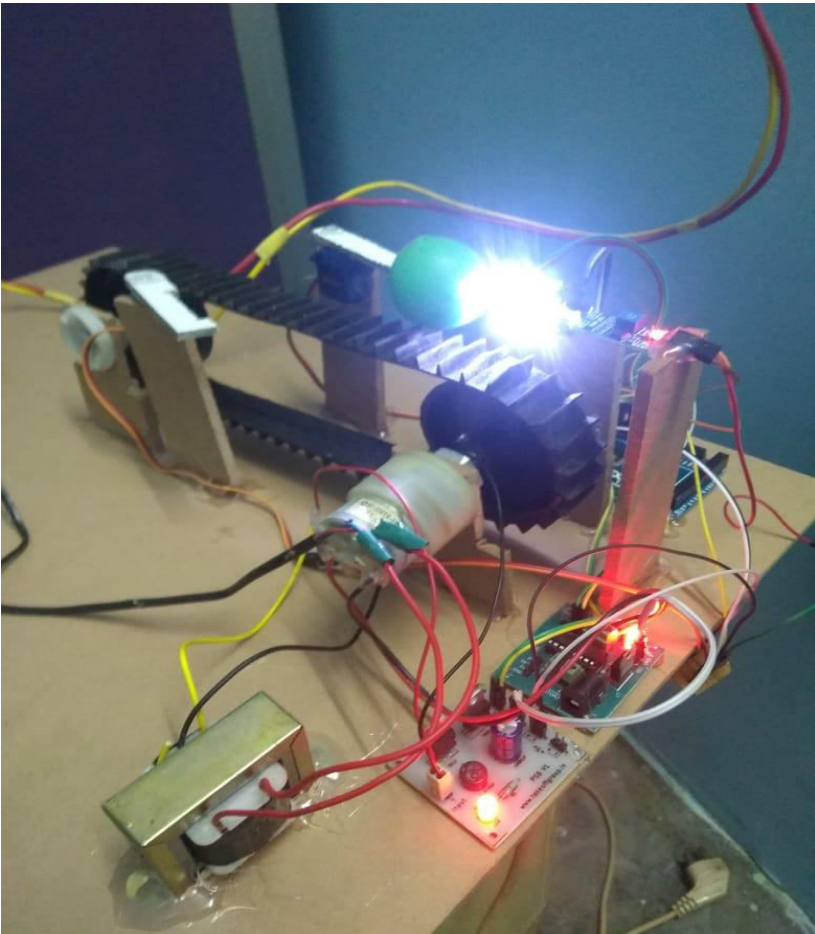
STEP 2 :- Firstly the IR sensor gets activated, and if the IR sensor detects the

objects on the belt, the conveyor starts to move.

STEP 3 :-The colour sensor will verify the colour of the object in the moving belt.

STEP 4 :-According to the sensed colour, the servo motor will activate, and it will

get the precision movement and throws the object into the box.

III. RESULT
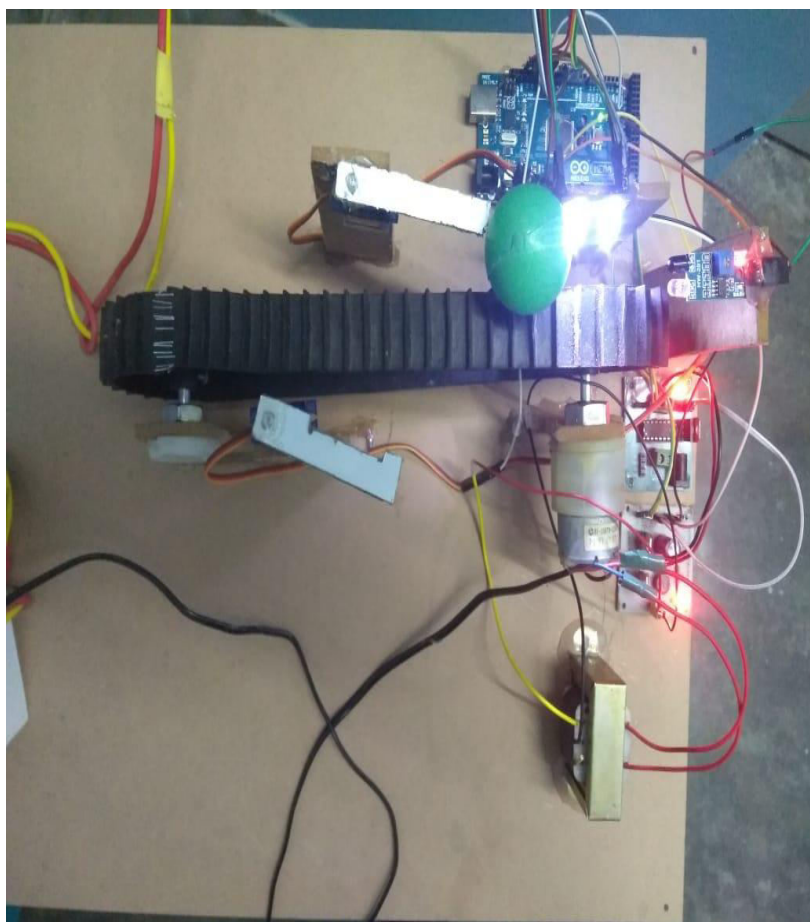
IV. ANALYSIS

Advantages:

- High efficiency.
- High speed of operation.
- High precision: margin of error can be reduced to great extent.
- High degree of intelligence.
- Low failure rate with long life.
- Reliable operation and maintenance.
- Fully automatic operation.

Applications:

- Industrial
- Domestic
- Pharmaceutical, and hazardous environment

V. CONCLUSION

This Project idea when implemented commercially will result in efficient monitoring and control of industrial automation i.e. monitoring and controlling of conveyor belt. Hence easily handling the martial art does not require initial effort and saves time as well as reduction in ideal time where wastage in traditional conveyor belt system.

FUTURE SCOPE:

- This project really helps in achieving the greater accuracy in the sorting of objects ans saves the time and manpower.
- This implementation will have the great scope in automating the process in the industries and domestic areas.

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