

ABSTRACT

An usually, the transfer process of material or waste banishment process from industrial it's hard to do because of lack of personnel to carry out the process and make the entire production process is inhibited. This can be minimized by replacing the sender of this material with robotic systems automatically.

In this project, the author will design a line follower system which is able to recognize and distinguish the RGB colors on a predetermined path, which is authenticated by RFID. This system is designed by ATmega328 microcontroller as the center of the process, using a Light Dependent Resistor (LDR) and Light Emitter Diode (LED) for detecting colored lines and EM4001 RFID readers with low-frequency standards. RFID cards are brought closer to the reader who will determine what kind of colour that are prioritized by line-follower robot. As the input signal processor of the LDR will be used as the adaptive algorithm control logic in the colour sorting.

The results obtained by the robot is able to adapt to change colour on a track that is already available and RFID as user identification with input card red, green, blue. The robot can follow the track using refresh rate under 100 ms. Average speed for every track $\pm 0,01$ m/s.

Keywords: Line-Follower, RFID, Colour Detection, Adaptive Algorithm