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Industrial Product Monitoring System using Virtual Wall

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Abstract: In current industrial situation, there are numerous issues happening identified with tallying system of the item made by the business. For example, the human tallying mistake, some article is extraordinarily blocked not identified by the IR sensor, moderate activity of machines and illicit moving of merchandise bringing about debasement. All these in a roundabout way influence the overall revenue of the business. So there is a need of an idiot proof framework to dispose of larger part of above issues. Scouting is most critical security frameworks in home, industry, office and open spots. Our Idea is to plan an Industrial item checking and observing framework utilizing IoT. This Idea depends on the sensor systems used to screen industrial applications by actualizing industry standard conventions utilizing IoT. The principle point of this proposed thought is to screen little scale industrial applications.

Keywords: Node-MCU, Proximity Sensor

I. INTRODUCTION

Virtual divider is a propelled idea utilized for little scale and expansive scale industry. Utilizing the vicinity sensor it can without much of a stretch identify both metallic and nonmetallic items. Such item will be identified and meant confirmation of dead stock and consumable sections. All information can be safely put away by utilizing IoT. Virtual divider is an idea of cutting edge technique for defending faculty around numerous unsafe machines. Virtual divider offer opportunity, adaptability and decreased administrator as contrasted and conventional guarding techniques, for example, industrial hindrances, sliding doors and draw back limitations. Virtual divider streamlines routine errands like machine setup, support and fix. The virtual divider framework depends on IoT stage. It gives the applications, for example, continuous Industrial item checking, wellbeing observing and its examination. Our framework is straightforwardly associated with Wi-Fi utilizing Node-Mcu without utilizing GSM.

II. LITERATURE REVIEW

A. Historical Background

One test that numerous producers in different businesses must face is the prerequisite to check a wide assortment of little parts. Little parts are monotonous and difficult to hand tally in the industrial setting without human mistake, which is the reason increasingly productive strategies are accessible. Regardless of the business, little parts are required. Little parts are utilized in the assembling of metal merchandise, electronic segments, and vehicle producers. Precise tallying scales are important for bundling these parts for delivery. An item producing includes enormous examination and quality administration alongside its amount estimations. As there are two dimensions of assembling enterprises, they are fundamentally named: Small-scale businesses and Large-scale ventures.

1) Small-scale industries

2) Large-scale industries

The classification is purely based on production rate i.e. quantity factor. It can generally be achieved by manual labor in case of industry with low production rate. Counting the number of objects placed on a moving conveyor that helps in improving the statistics of the production. This can generally be achieved by using IR sensors and micro-controller as key components and to provide a digital display of the count on a LCD screen

B. Summary of Review Paper

In first audit paper, it was seen that IR sensor utilizing arduino - Uno sensor was not able to distinguish and tally the metallic products due to fluctuating light force. Similarly in second audit paper which was continuous GSM based following framework it was discovered that. GSM which is utilized to send message happened system issues and made the circuit convoluted.

C. Need of Project Work

In Manual checking framework we couldn't get the right and confirmed information. The combine of IR sensor is utilized for Product observing framework, which is wasteful framework since it can't recognize Metal. Our framework gives greatest exactness in checking framework by Collection of Proper information base. And furthermore identifies all metallic and nonmetallic items.

D. Problem Statement

In Manual observing framework we couldn't get the right and verified information. In little scale industry the match of IR sensor is utilized for Product checking framework which is wasteful framework since it can't identify Metal.

E. Objective

- 1) To give most extreme exactness in tallying framework
- 2) To recognize the all metallic and nonmetallic items
- 3) To give conveniences
- 4) Accumulation of Proper information base

III. SYSTEM DEVELOPMENT

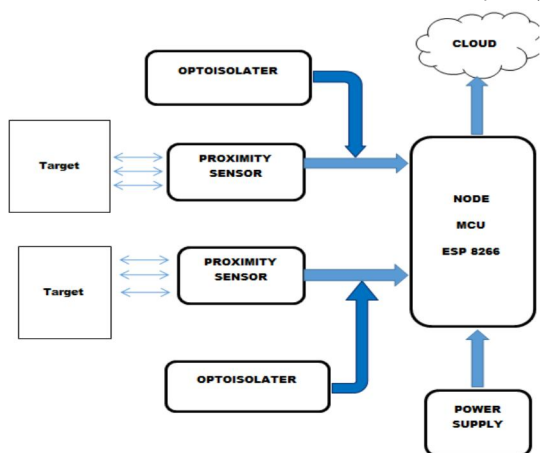


Fig. 1 Block Diagram of Implemented System

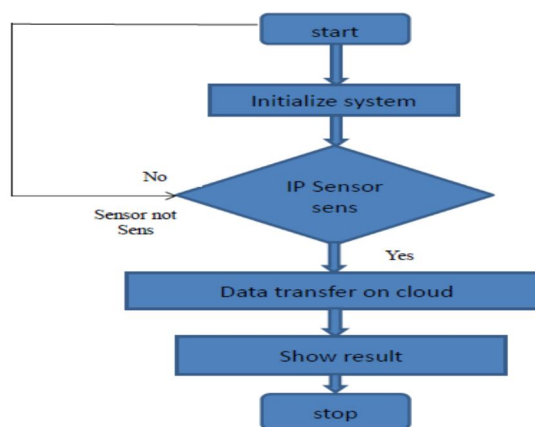


Fig. 2 Flow Chart of Implemented System

There are two pairs of sensor placed at transmitter and receiver side, which are kept exactly opposite to each other across the edges of the belt. When an object passes through the sensors, then the Arduino gets an interrupt signal (from PROXIMITY sensors) to increment the count and display

A. Hardware Requirements

- 1) Proximity sensor: A proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact.
- 2) Opto isolator: An opto-isolator (also called an opto-coupler, photo-coupler, or optical isolator) is an electronic component that transfers electrical signals between two isolated circuits by using light.
- 3) NODE MCU: The ESP8266 is the name of a micro controller designed by Espressif Systems. The ESP8266 itself is a self-contained WiFi networking solution offering as a bridge from existing micro controller to WiFi and is also capable of running self-contained applications.

B. Software Requirements

- 1) Arduino IDE Software
- 2) IoT Protocols: MQTT: An MQTT system consists of clients communicating with a server often called a "broker". A client may be either a publisher of information or a subscriber. Each client can connect to the broker.
- 3) REST: RESTful (representational state transfer) API (application programming interface) DLs (description languages) are formal languages designed to provide a structured description of a RESTful web API that is useful both to a human and for automated machine processing.

IV. METHODOLOGY

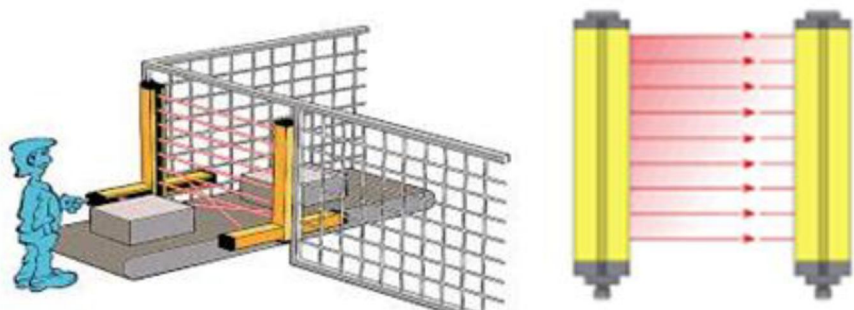


Fig. 3 Theme of System

There are two proximity sensors mounted on the conveyor belt, in order to count the metal products. Using NODE - MCU ESP 8266 the required data is being stored on data cloud.

An opto isolator is used as an intermediate device between proximity sensor and NODE- MCU. In order to provide 3.3 V to NODE - MCU ESP 8266, an opto isolator is used as an intermediate device between proximity sensor and NODE- MCU.

There are two pairs of sensors placed at transmitter and receiver side, which are kept exactly opposite to each other across the edges of the belt. When an object passes through the sensors, then the Arduino gets an interrupt signal (from PROXIMITY sensors) to increment the count and display.

A. Overall Circuit Diagram

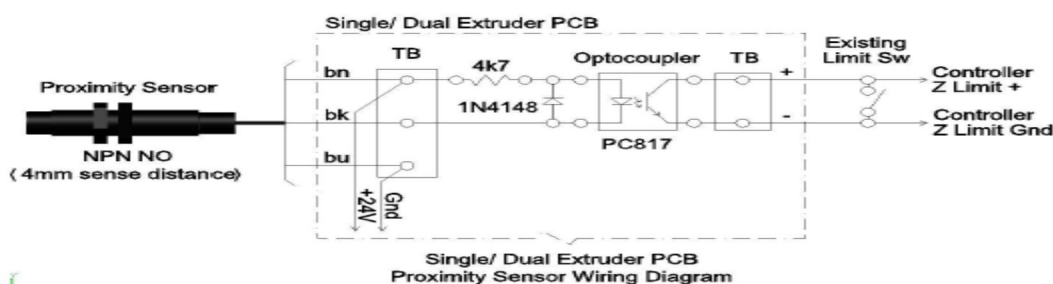


Fig. 4 Circuit diagram of System Implemented

V. CONCLUSION

At industrial dimension, there is a need to conquer serious issues identified with items identification and considering such human tallying mistakes. We presume that "Virtual Wall System" is a finished secure framework that can be actualized in both little scale and expansive scale industry. For recognition and tallying of both metallic and non-metallic article utilizing vicinity sensor and the creation information can be put away on cloud utilizing IoT.

A. Application

- 1) Automatic car parking system
- 2) At Traffic signal
- 3) Product monitoring system in Industry
- 4) For safety Application

B. Advantages

- 1) Accurate counting system
- 2) Fast processing
- 3) Using IoT result stored easily
- 4) Easily access by WI-FI
- 5) Collection of Proper data base

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