

IR based Telemetry System

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Abstract:- This paper deals with the IR-based technology to transmit and receive the data between devices by using IR-sensor. The IR-based data transmission and reception is a wireless technology so it will also boost the wireless communication. Resulting, IR-based data transfer project aim to develop a wireless communication system. This paper will explore the capabilities of IR-based data transfer and its applications in the various fields such as home automation, remote control system, and wireless data logging etc. the IR-based research and development technology is explored in this paper and provide the insight about its practical implementation for the wireless data transmission. It also uses the microcontroller for its implementation. By using micro-controller programming this project can be implemented successfully.

Keyword:- Microcontroller AT89C51/89s52, IR Sensors, Regulator, LCD etc.

I. INTRODUCTION

This paper consists of basically two modules and these modules are transmitter module and receiver module. The transmitter module consists of infrared LED for the data transmission. The LED emits modulated infrared signals. The encoded data is transmitted using this modulated infrared signal.

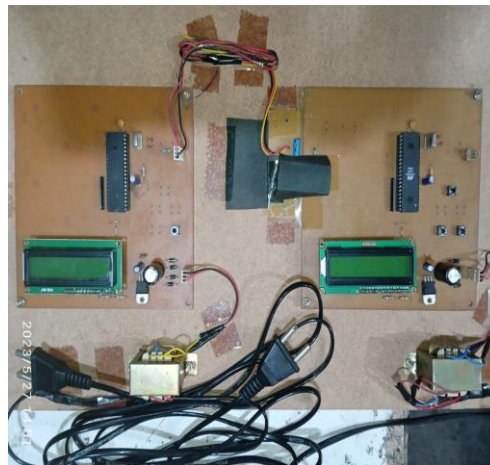


Fig. 1: Transmitter and receiver module on the other hand the receiver module consists of IR- sensor or the photodiode that detect the modulated

Infrared signal and convert back them into electrical signal as shown in Fig 1. These signals are processed by the microcontroller or other devices. Telemetry plays a vital role in remote monitoring and data acquisition system. The project consists of various sections. Some are discuss below:

A. Micro-controller at 89c51/89s52

The AT89C52 based micro-controller has the various feature such as it consist of 8K bytes of flash memory, 256 byte RAM, 32 I/O pins, three 16 bits timer/counter, a six vector two level interrupt, architecture, a full-duplex serial port, on chip oscillator and clock circuit. The AT89C52 is designed with static logic for operation.

B. Colour sensor

The colour sensor is a electronic device that can detect the colour and measure the colour of the object or surface. It uses more than one photodiode to detect the intensity of the light at different wavelength which can be used to determine the colour of the object. This type of colour sensors can be found in a wide range of application. They also used in robotics and automation to detect and recognize object.

II. LITRATURE SURVEY

The telemetry system is an alternating method of transmitting and receiving the data using IR-sensors. In this paper the IR technology is explored. Here metal sensors and colour sensors are used so that the controller can take the decision after processing the received data from these sensors. Till this time the technology enhances very rapidly and provides

the new era of the data transmission. The telemetry system provides the innovative solution to acquire the fruitful data from the remotely located areas within harsh industrial environments including waste water treatment, oil and gas manufacturing and processing, chemical plants and refineries. This monitoring system provides the unique remote monitoring. Industrial operations show the level of hazards to both personnel as well as environment. With monitoring and management system the designated personnel can receive customized alert via text or email. The user can easily access this system. We also use the wired and wireless configuration for both cellular and satellite network. This system is very easy to use and less expansive. It can save money spent in infrastructure, equipment, installation and maintenance and software upgrades. The device which collects the data from the environment and this raw data is processed by Arduino Nano micro-controller after that we receive the final output. The IR sensor operate upto 400THz.

III. METHODOLOGY

The conveyor belt system decides the design of the colour and metal sorting machine which moves the material through the sorting process. Basically the machine consist of three main components which are:

- 1) Colour sensor
- 2) metal sensor
- 3) microcontroller

The colour sensor uses a light source and the colour of material is detected by the colour detector. The electromagnetic field is used by a metal sensor to detect the presence of the metal. The microcontroller Arduino Nano uses the sorting algorithm for the materials. The data collected by the sensors is used by the sorting algorithms to sort the material. These algorithms are used to identify the colour and composition of the material and determine the appropriate sorting process. The sorting process includes diverting the material to a separate conveyor belt. By this process we can sort the material easily with very low cost.

IV. RESULT

The result is quite satisfactory and colour detecting sensors worked very well. It detecting the colour based on the algorithms used. In this paper we use the coding for red color so it can detect red object very easily and change the direction of servomotor left or right depending on the coding written in the microcontroller. It sorts the object in right place. For increasing the torque the DC motor was used for the shaft movement as well as conveyor belt. The movement from the starting point to the end points through the roller. The system performed well and it programmed and detects the objects according to their color. The colour and metal sorting machine was tested using materials including plastic, glass, wood, and metal. The machine was able to sort material based on their colour and metallic nature with an accuracy rate of 95%.

V. CONCLUSION

This type of application is very use full in modern time. This project can be used for various places such as for sorting of the metal depending on the coding used in the microcontroller. The metal sorting and colour machine is very useful in modern time. The machine is very fast, accurate and efficient. It reduces the manual labour and increase the productivity. Depending on the colour the machine can sort the variety of materials and metal composition. It also provides quality control and improves overall efficiency of the system. Further research could focus on improving the sorting algorithms and expanding the machine's capabilities to include other properties, such as size and shape.

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