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SPEED MONITORING AND CONTROLLING OF MOTOR USING INTERNET OF THINGS (IOT) ENHANCED WITH WI-FI

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ABSTRACT

The rapid growth of industry and advancement of technology has resulted in reduction of human efforts, the main reason for which being machines. Machines are playing an important role in our life. In this project, we use internet to establish communication between the user and Monitoring unit. In this proposed system, we are monitoring and controlling the speed of DC motor as well as direction of the motor. This system consists of microcontroller, Temperature sensor, DC motor and WI-FI module. Here we are controlling the speed of the motor using webpage through WI-FI. Simultaneously, we can also control the direction of the motor whether to be rotated in clockwise or anticlockwise direction. We can measure the temperature of the DC motor using temperature sensor**.**

Keywords: WIFI, Anti Clockwise, Sensor.

1. INTRODUCTION

In addition, the availability of fast-processing, stable and sensitive products provided particular benefits in industrial automation. As a result of the developments in Communication technologies, systems are no longer monitored and controlled by personnel using classic methods, but automatically by computer-controlled or remote-controlled devices. Industrial environmental conditions have been upgrading day by day with this newly introduced automatic techniques as a result of getting rid of the conventional procedures of manufacturing increasing huge workloads.The next generation industries will be Technological developments have enabled to be taken classic systems place by Automatic and advanced systemsdefinitely more advanced and automatic as compared with existing ones. This brings on a new terminology of "Smart Industries" in this new era of Monitoring as well as controlling of various Industrial applications. As an emerging technology brought about rapid advances in modern wireless telecommunication, Internet of Things (IoT) has attracted a lot of attention and is expected to bring benefits to numerous applications. The newly introduced concept of "Internet of Things" (IOT) is providing a helping hand to achieve the Industrial automation through remote access. In IOT each device or devices constituting a system will be able to communicate with the other devices or system in the same premises over a common platform. Hence this leads to exchange of relevant data, statistics, logs and various other parameters information among various devices to improve their performance, which will help industries to have better productivity, management and increased throughput.

2. PROPOSED SYSTEM

The proposed system consists of microcontroller, Temperature sensor, DC motor and WI-FI module. Here we are controlling the speed of the motor using webpage through WI-FI. Simultaneously, we can also

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control the direction of the motor whether to be rotated in clockwise or anticlockwise direction. It is possible to measure the temperature of the DC motor using temperature sensor.

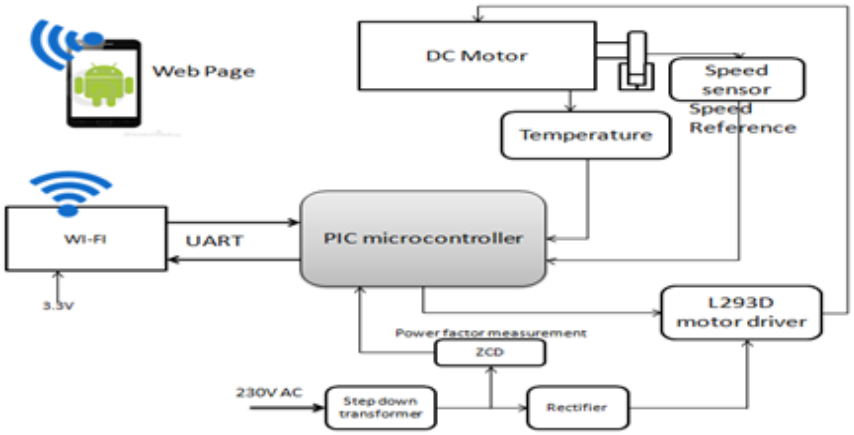

Fig.1. Block diagram

3. HARDWERE IMPLEMETATION

A.TEMPERATURE SENSOR

Thermistors are thermally sensitive resistors whose prime function is to exhibit a large, predictable and precise change in electrical resistance when subjected to a corresponding change in body temperature. Negative Temperature Coefficient (NTC) thermistors exhibit a decrease in electrical resistance when subjected to an increase in body temperature and Positive Temperature Coefficient (PTC) thermistors exhibit an increase in electrical resistance when subjected to an increase in body temperature. Temperature is the most often-measured environmental quantity. This might be expected since most physical, electronic, chemical, mechanical, and biological systems are affected by temperature. Certain chemical reactions, biological processes, and even electronic circuits perform best within limited temperature ranges. Temperature is one of the most commonly measured variables and it is therefore not surprising that there are many ways of sensing it. Temperature sensing can be done either through direct contact with the heating source, or remotely, without direct contact with the source using radiated energy instead. There are a wide variety of temperature sensors on the market today, including Thermocouples, Resistance Temperature Detectors (RTDs), Thermistors, Infrared, and Semiconductor Sensors.

B. CIRCUIT DIAGRAM

Fingerprint identification is the method of identification based on the different patterns of human fingers, which is actually unique among each person. It is the most popular way of acquiring details of any person and is the most easy and convenient way of identifying a person. An advantage of fingerprint

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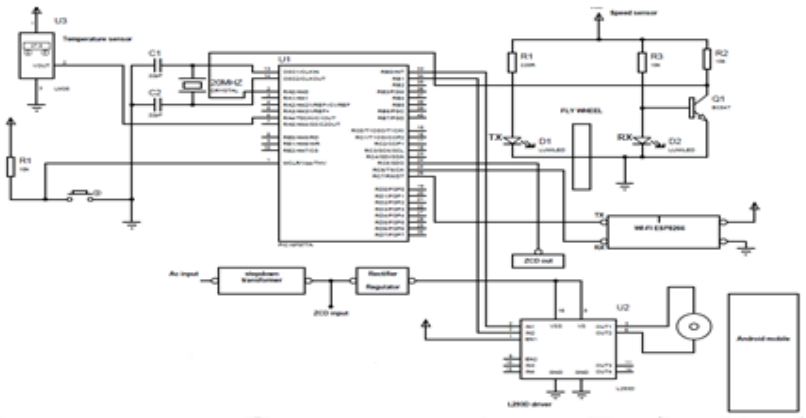

Fig.2. Circuit diagram of vehicle unit

C. **LM35 MODULE:**

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in ° Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling. The LM35 does not require any external calibration or trimming to provide typical accuracies of ±1⁄4°C at room temperature and ±3⁄4°C over a full −55 to +150°C temperature range. Low cost is assured by trimming and calibration at the wafer level. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. It can be used with single power supplies, or with plus and minus supplies. As it draws only 60 μA from its supply, it has very low self-heating, less than 0.1°C in still air. The LM35 is rated to operate over a −55° to +150°C temperature range, while the LM35C is rated for a −40° to +110°C range (−10° with improved accuracy).

D.WI-FI MODULE:

ESP8266 WIFI Module:

ESP8266 is an impressive, low cost WIFI module suitable for adding WIFI functionality to an existing microcontroller project via a UART serial connection. Thes module can even be reprogrammed to act as a standalone WIFI connected device–just add power! The feature list is impressive and includes: 802.11 b/g/n protocol Wi-Fi Direct (P2P), soft-AP Integrated TCP/IP protocol stack. This guide is designed to help you get started with your new WIFI module so let's start! The hardware connections required to connect to the ESP8266 module are fairly straight-forward but there are a couple of important items to note related to power: The ESP8266 requires 3.3V power–do not power it with 5 volts. The ESP8266 needs to communicate via serial at 3.3V and does not have 5V tolerant inputs

E. DC MOTOR:

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to

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harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.

F.RPS :

Almost all electronic devices used in electronic circuits need a dc source of power to operate. The source of dc power is used to establish the dc operating points (Q-points) for the passive and active electronic devices incorporated in the system. The dc power supply is typically connected to each and every stage in an electronic system. It means that the single requirement common to all phases of electronics is the need for a supply of dc power. For portable low-power systems batteries may be used, but their operating period is limited. Thus for long time operation frequent recharging or replacement of batteries become much costlier and complicated. More frequently, however, electronic equipment is energized by a power supply, derived from the standard industrial or domestic ac supply by transformation, rectification, and filtering.(The combination of a transformer, a rectifier and a filter constitutes an ordinary dc power supply, also called an unregulated power supply).

4. SIMULATION RESULT:

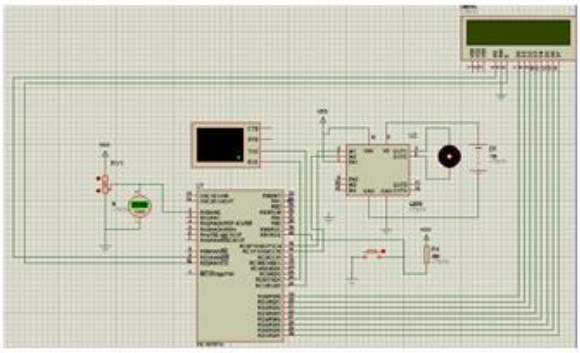

Fig.3.Simulation diagram

FORWARD:

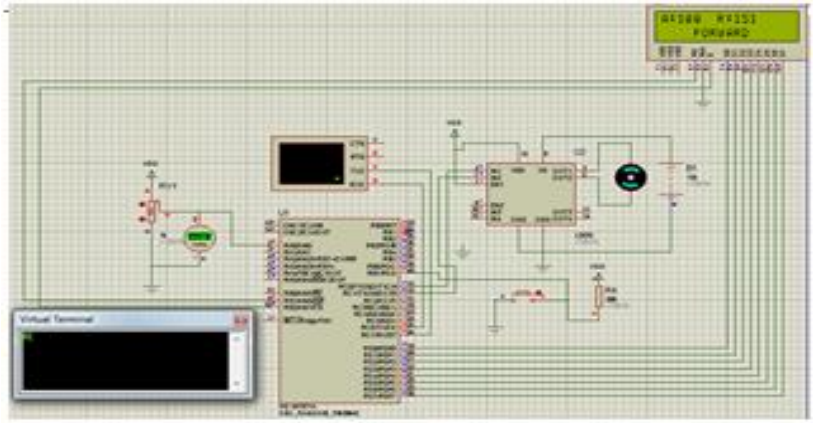

Fig.4. Forward direction

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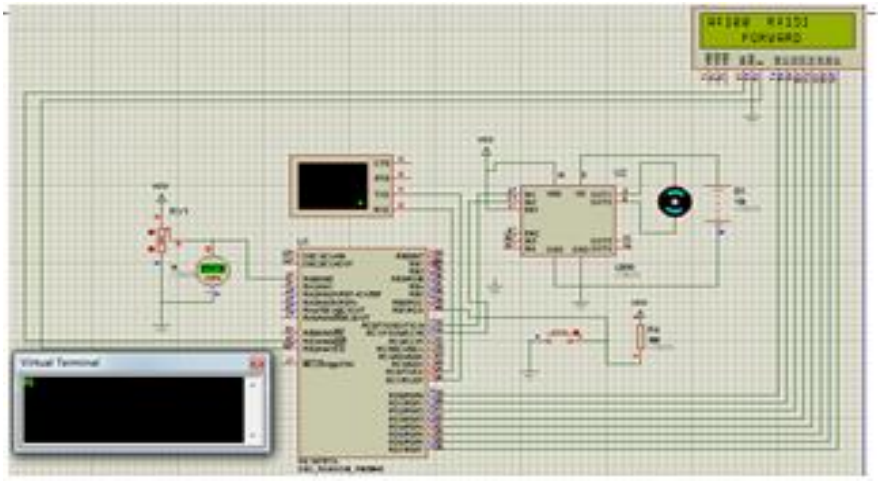
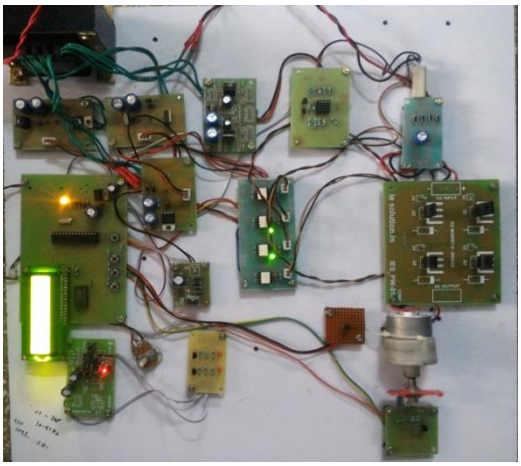


Fig.5.Reverse direction

5. HARDWARE RESULT



CONCLUSION:

This paper has presented the design and implementation of Internet of things for monitoring and controlling of various application and parameters in industries using wireless communication technique. The key idea of the proposed work is to provide flexible and long distance connectivity between industrial environment and user. The advantages of the developed system are to have a continuous monitoring over industrial

applications and also control them if going beyond their threshold conditions. Future work will focus on improvement of above proposed work and adding features to make a reliable smart Industrial monitoring and controlling system.

REFERENCES:

[1] "Real-Time Monitoring and Control of the Parameters of an Induction Motor", Department Of Electrical and Electronics Engineering, Technology of Faculty, Gazi UniversityTeknikokullar Ankara, Turkey

[2] "Remote Controlling and monitoring of Induction motors using internet", Abdulkadir, Cakır, Hakan Cali's, Gokhan Turan Suleiman Demirel University, Faculty of Technology, Department of Electrical and Electronic Engineering, Isparta Turkey

[3] "Research on remote wireless monitoring system based on GPRS and MCU" , Zhong-Xuan, J. Xiau-Yu, H. Zhao-Fu, Z. Yan-Tao, D. Meng,Int. Conf. Computational Problem Solving ICCP 2010, Lijiang, China, Dec.

[4] Akatsu K. and Kawamura A., (1999), ―Sensor less very low and zero speed estimations with on-line secondary resistance estimation of induction motor without adding any signal‖, Proc. IEEE Ind. Applicant. Soc. Annual. Meeting, pp. 187–193.

[5] D. S. Ghataoura, J. E. Mitchell, and G. E.Matich, "Networking and application Interface technology for wireless sensor network surveillance and Monitoring," IEEE Commune. Mag., vol. 49, no. 10, pp. 90–97

[6]. Thompson H. A, "Wireless and Internet communications technologies for monitoring and control", Control EngineeringPractice, no. 12, pp. 781– 79, 2004

[7] Xiaorong .C, Zhan .S, G. Zhenhua, "Research on remote data acquisition system based on GPRS", 8th Int. Conf. ElectronicMeasurement and Instruments ICEMI 2007 Xian, China

[8] "From today's INTRAnet of things to a future INTERnet of things: a wirelessand mobility-related view" M.Zorzi, Gluhak.A, Lange.S, Bassi.A, IEEE Wireless Communications, 2010, Vol.17, Issue.6, pp.44-51.
[10] AVR ATmega32A datasheet at www.atmel.com/literature

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