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Monitoring and Controlling of DC Motor Using IOT

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ABSTRACT-We are proposing the process monitoring and control system by using IOT.Here we are using the IOT for the process monitoring and control which allows us to control various operations from a very long distance .Here the whole system is going to be controlled by using a user interface (pc or smart phone).The signals can be transmitted and received by using of the IOT cloud interface with the help of GSM. Here de Lorenzo setup is used for the sensing of various parameters of motor drive which is used to verify and control the speeds I/P power etc by using the control unit connected to it. In existing system the sign interface is connected between the motor and the pc directly. By using this interface we can able to monitoring and controlling can only be done at an limited radius. This can't be controlled from far distance. Also when the maximum range is covered by obstacles means it is difficult to control the systems and also leads to low data speed.

KEYWORDS: Dc motordrive,Raspberry pi0,python.

I. INTRODUCTION

Now a day's there is advancement in technologies, in order to reduce the manpower in industries, the industries are shifted towards automation. In the existing system; this manual monitoring can lead to inaccuracy. The coil in the DC motor is used for the insulation purpose. In the proposed system, this was done automatically by using the Raspberry Pi. The temperature sensor is used to monitor the temperature of the coil of the DC motor. The Raspberry Pi is used to control the process. The temperature was being monitored using the Raspberry pi. The Speed sensor is used to measure the speed of the DC motor. The pulse generated from the DC motor is used to measure the current. These measurements are used for the database. The database is used for monitoring the performance of the DC motor.

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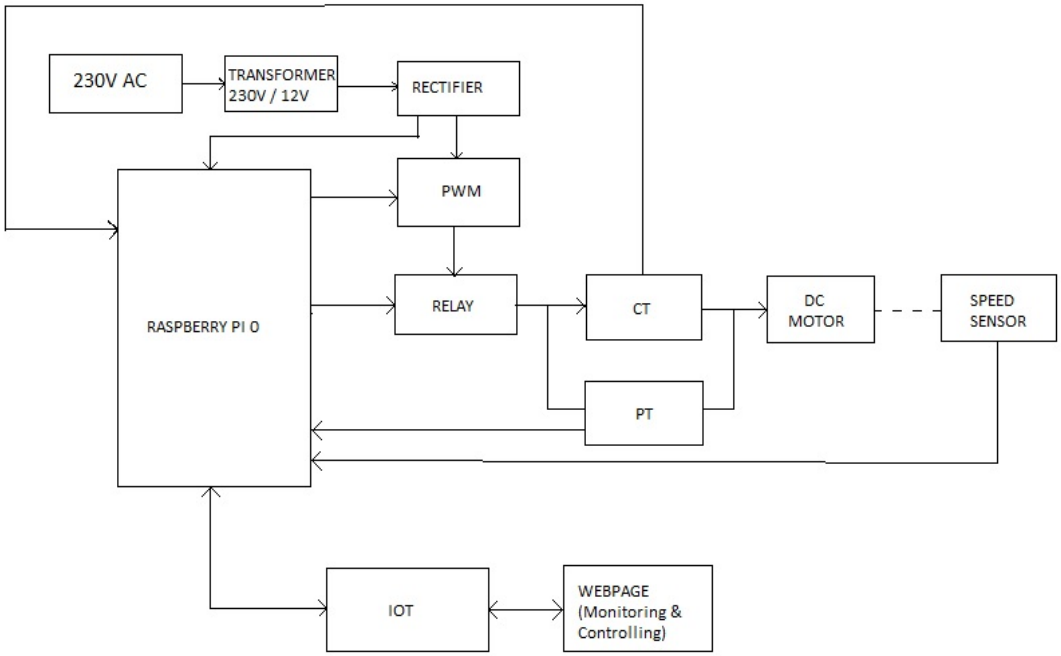
II. BLOCK DIAGRAM



BLOCK DIAGRAM EXPLANATION:

The above diagram gives an overview of the working of monitoring & controlling of dc motor in our system we are using 230/12v transformer for supplying the system the motor will be conrtol with the help of pwm converter. the realy we are using for motor on off control the current and potential transformers for messuresing the input voltage and input current.

COMPONENTS EXPLANATION:

DC MOTOR:

A DC motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic; to periodically change the direction of current flow in part of the motor.

DC motors were the first type widely used, since they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight motor used for portable power tools and appliances. Larger DC motors are used in propulsion of electric vehicles, elevator and hoists, or in drives for steel rolling mills. The advent of power electronics has made replacement of DC motors with AC motors possible on various applications

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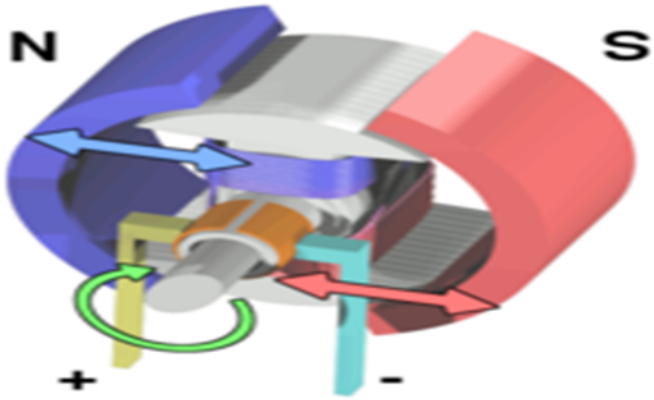

Fig : Dc motor

Electromagnetic Motor:

A coil of wire with a current running through it generates an electromagnetic field aligned with the center of the coil. The direction and magnitude of the magnetic field produced by the coil can be changed with the direction and magnitude of the current flowing through it.

MOTOR DRIVERINTRODUCTION:

L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction. It means that you can control two DC motor with a single L293D IC. Dual H-bridge Motor Driver integrated circuit (IC). A motor driver is a little current amplifier; the function of motor drivers is to take a low-current control signal and then turn it into a higher-current signal that can drive a motor.

The L293D IC receives signals from the microprocessor and transmits the relative signal to the motors. It has two voltage pins, one of which is used to draw current for the working of the L293D and the other is used to apply voltage to the motors. ... It does not change the signal in any case.

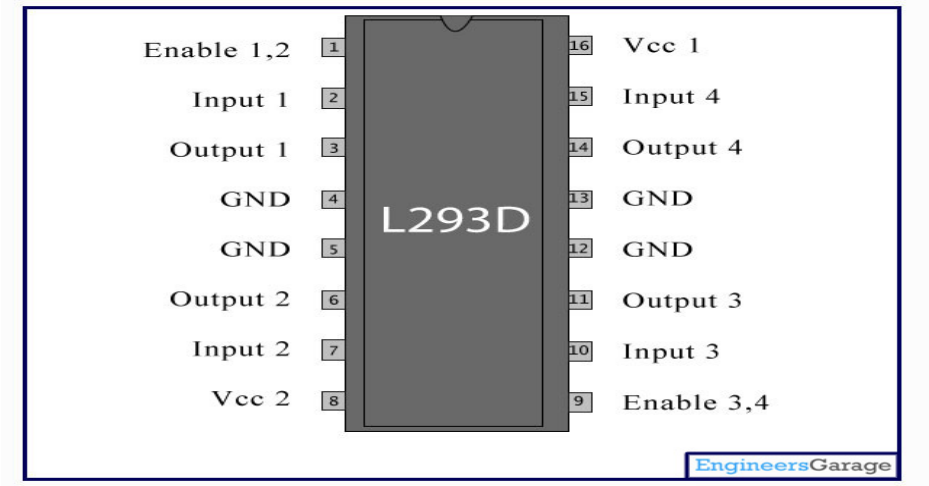

fig:Raspberry pindiagram

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it requires another supply which can handle the current requirement. A simple DC motor driver can be thought of as a kind of amplifier. "Brushless DC", stepper, and various other sorts of motor with multiple windings are more complex, and sequence the power to the windings to achieve the right movements.

The Raspberry Motor Shield is based on the L298 (datasheet), which is a dual full-bridge driver designed to drive inductive loads such as relays, solenoids, DC and stepping motors. It lets you drive two DC motors with your Raspberry board, controlling the speed and direction of each one independently.

Raspberry Pi:

Raspberry Pi board is a miniature marvel, packing considerable computing power into a footprint no larger than a creditcard. It's capable of some amazing things,but there are a few things you're going to need to know before you plunge head-firstinto the bramble patch.

ARM vs. x86

The processor at the heart of the Raspberry Pi system is a Broadcom BCM2837 system-on-chip (SoC) multimedia processor.This means that the vast majority of the system's components, including its central and graphics processing units along with theaudio and communications hardware, are built onto that single component hidden beneath the 256 MB memory chip at thecentre of the board (see Figure 1-1).It's not just this SoC design that makes the BCM2837 different to the processor found in your desktop or laptop, however. Italso uses a different instruction set architecture (ISA), known as ARM.

PYTHONINTRODUCTION:

Python is an interpreter, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as scripting or glue language to connect existing components together Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance.

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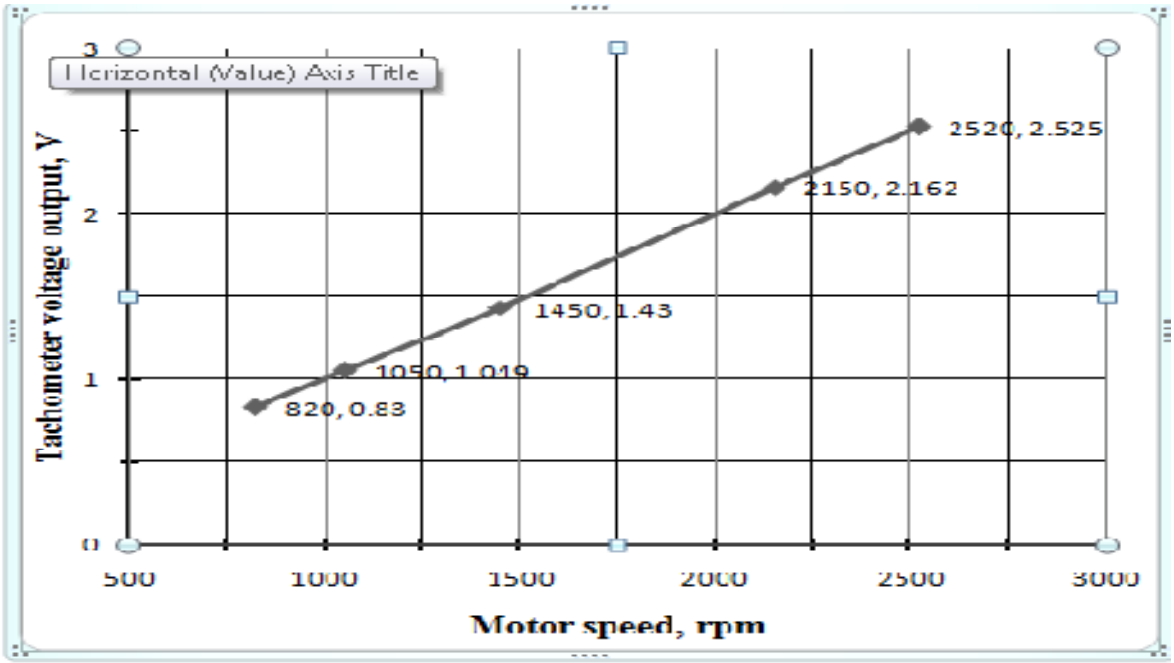
RESULTS:



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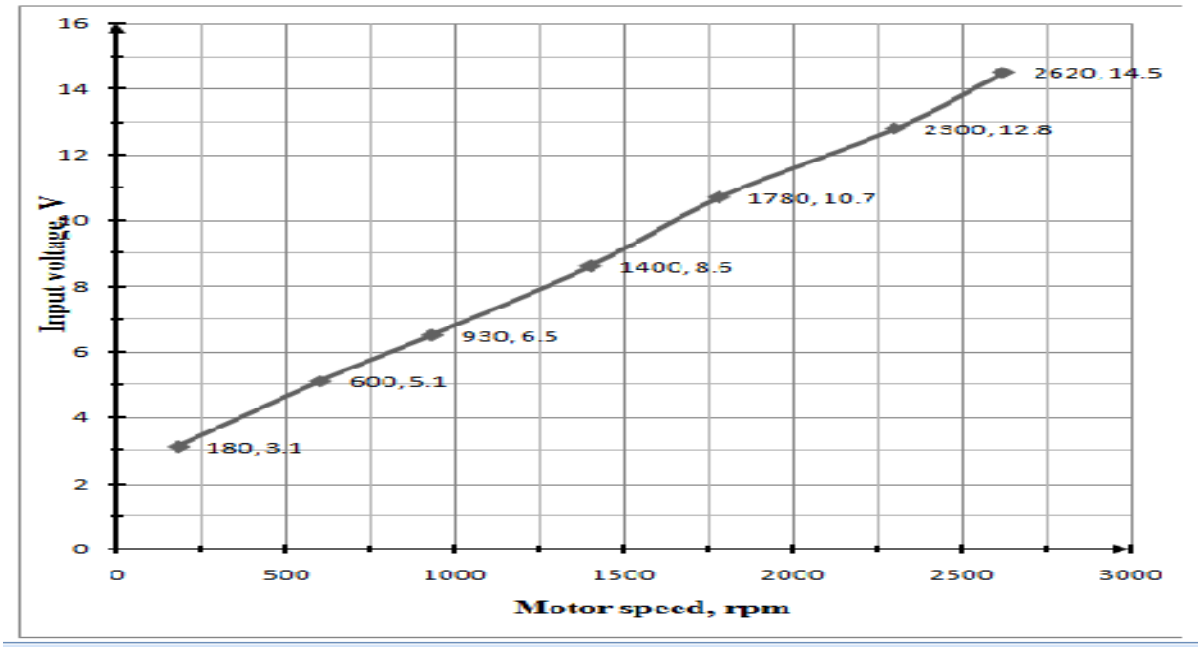

III. CONCLUSION

In this project a prototype model of monitoring and control scheme for motor control was designed based on raspberry pi0 interface. Necessary software and hardware were designed to interface the model with mobile. The whole model was implemented with various sensing and controlling units to the Motor. The performance of the IOT based prototype with the Raspberry pi interface was tested and satisfactory results were found during the tests.

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