Predictive Maintenance of Industrial Motors

Introduction:

Overview:

As technology increased drastically in nowadays we can access any electronic device by using IOT. Present we all are using wireless devices to communicate with each other, we can also control any device wirelessly using IOT. They can be controlled because they will be connected to internet.By using IOT there are many advantages that increase in efficiency,cost is reduced,less power consumption. By using IOT we can continously monitor the motor condition send notification to the owner.

Purpose:

By using the internet of things we can monitor the motor condition in the industries and the parameters are temperature,humidity,current,vibrations.And we can prevent of short circuits and damage of that motor.

Literature Survey :

Existing problem:

In many industries there will be many induction and different types of motors.And it is very difficult to monitor the condition of that every motor as that motors will be working many hours.Most of the industries uses the human to monitor the condition of that every motor and many other industries using smart devices to monitor.But the person or owner should be present in the industry to solve the problem. But incase if he was not in the industry there may be a chance of loss and damage of motors.

Proposed solution:

By using IOT and some smart devices like temperature sensor,humidity sensor,current sensor,vibration sensor and a raspberrypi we can monitor the above parameters continously and if the parameters beyond the threshold value we prevent the loss and access the motors wirelessly.

Theoritical analysis:

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Block diagram:

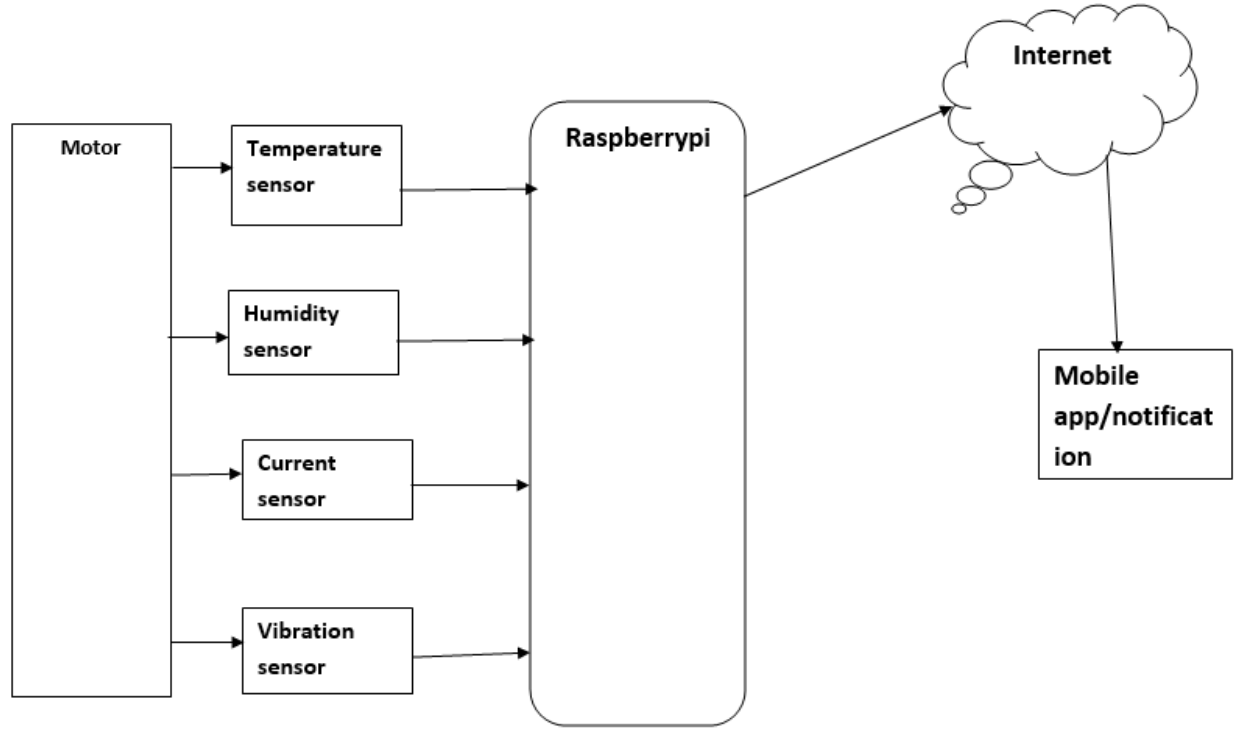

Figure 1: Block diagram

Hardware/software designing:

The hardware part of the project involves the Raspberry Pi 3 Model. The four sensors are connected to the Pi via the I2C interface. The sensor values are read by the Pi, processed, and then sent to the IBM Cloud services using the Pi's Wi-Fi module. The data send to mobile application which was developed using MIT app Inventor. Here we use python language for coding.Node-Red,etc,.Software tools are used

Experimental investigation:

There are many challenges in IOT based on authentication of the devices.Based on some situations frequent authorization and authentication are necessary but potentially resulting in changes of the authorization of the IOT devices.To solve this problem automatic authentication is required to remember passwords of many devices.

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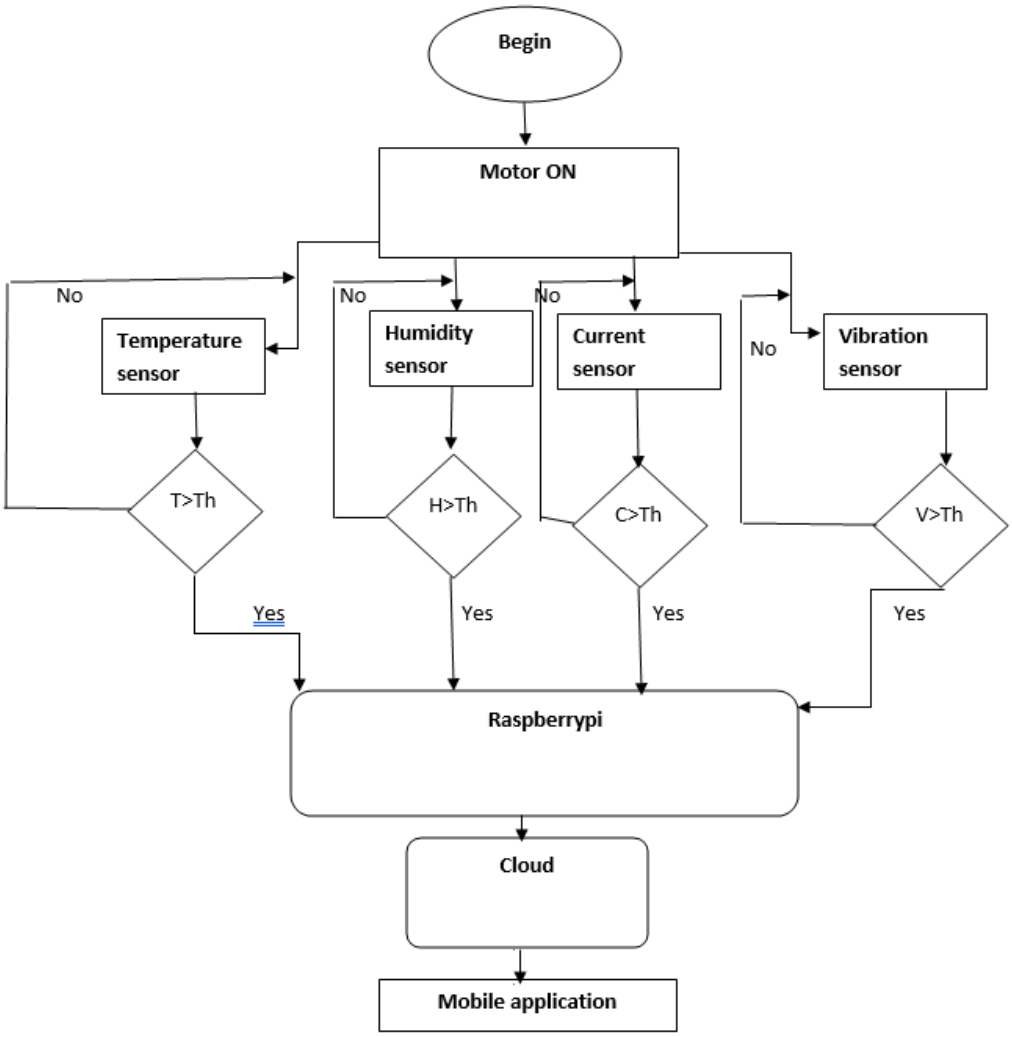
Flowchart:



Result:

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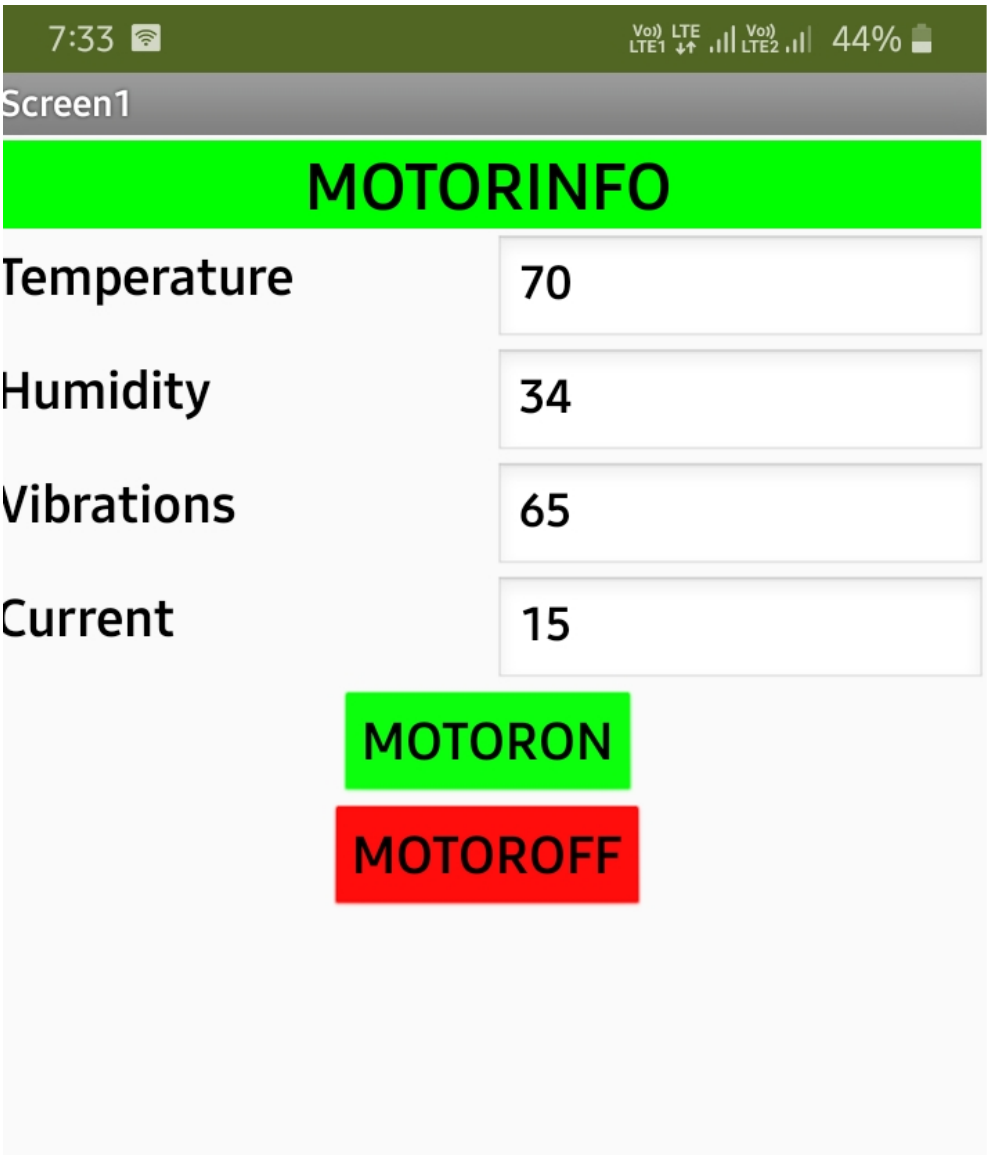

Advantages and disadvantages:

Advantages of IOT in maintanence of motors:

- Increased efficiency
- Less power consumption
- Increase in life of motor
- Easy to access
- High productivity

Disadvantages of IOT in maintenance of motors:

As a coin has two sides for every device has both pros and cons

- Installation cost

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Applications:

- Industrial motor condition monitoring
- Irrigation purpose
- Smart home application

Conclusion:

By this we can conclude that Industrial motor is effectively and continuously monitored by using different sensors and the obtained data is stored in the cloud platform and is accessed from different locations using web application by using IOT and we can prevent the damage of the motor.And reduce the manual monitoring.

Future scope:

In future all devices will be automated by using many technologies such as AI and machine learning.And the industrial motors will be monitored using IOT.

Biblography:

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