

A
Synopsis
On



Weather Forecast Using IOT and ML

Major Project
For
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Submitted By:

Bharat Sharma (191599003)

Pushpraj Singh (191599015)

Mohit Sharma (191599011)

Abhishek Tomar (181500030)

Submitted To:

Mr. Jitesh Kumar Bhatia

Assistant Professor CSE Department GLA

INTRODUCTION

Weather forecasting is the application of science and technology to predict the state of the atmosphere for a given location. Ancient weather forecasting methods usually relied on observed patterns of events, also termed pattern recognition. For example, it might be observed that if the sunset was particularly red, the following day often brought fair weather. However, not all of these predictions prove reliable. Here this system will predict weather based on parameters such as **temperature, humidity, wind speed, wind direction and rainfall value.**

We are connecting the IoT sensors and collect the following value in Google Sheet.

- **Wind Direction**
- **Wind Speed**
- **Atmospheric Temperature**
- **Atmospheric Pressure**
- **rainfall value**

After this take Historical data with this and we make Prediction Machine Learning Model to predict the mentioned values. Later on we implement this ML Model with Time Series analysis for predicting the weather for continuous time. As a ML Model we use SVM (support vector machine) Algorithm.

We also used other Machine Learning techniques to check the Model Accuracy and performance. We only used that Algorithm that best fit in our ML Model.

Application:

- Agriculture
- Sports
- Tourist place
- Air Traffic
- Marine and Forestry
- Manufacturing Industries at Cloudy side

ADVANTAGE

- Anyone can easily find out Weather condition by using this system.
- This Model or System helps to predict the weather of Tourist place.
So that management team takes decision about the tourist.
- This system also helpful to effective control of the Sports.
- This system can be used in Air Traffic such as flight ,
- As we see crops of farmer destroy usually due to high rainfall, storm etc, through this system so farmer update itself to prevent the crops.
- In Marine and Forestry this system is very helpful.
- Military, and Navy also take advantage of this system.

DISADVANTAGE

- Previous data is required by the system to forecast weather.
- Quality of Hardware also big issue.

HARDWARE AND SOFTWARE TO BE USED

HARDWARE:

1. Node MCU
2. Rainfall Sensor
3. Wind Speed and Wind direction Sensor
4. Temperature Sensor
5. Atmospheric Pressure Sensor
6. Micro USB Cable
7. Prototyping board (Bread board)

SOFTWARE & LANGUAGE:

1. Arduino IDE, RStudio
2. R, Embedded C

CONCLUSION

We try to convert this project into Industrial product & individual product that anyone can buy this product for their organization to update the about weather in this digital transformation era. We also think to integrate the image processing based weather forecast technique that traditionally used by weatherist now days with Machine Learning based Model. By integrating both techniques we make low cost, reliable, accurate and decision based product that offer by anyone for decision purpose.

Thank You!