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 ijircce@gmail.com

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Weather Forecasting and Minimum Support Price Prediction of Crops

Dr. Naveen M, Javed Chowdhury, Vyas Balakrishna R, Babita Kurmi, Meghashree Roy

Associate Professor, Dept. of ISE, RRIT, Visvesvaraya Technological University (VTU), Bengaluru, India

UG students, Dept. of ISE, RRIT, Visvesvaraya Technological University (VTU), Bengaluru, India

ABSTRACT: 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 and wind. This system is a web application with effective graphical user interface. User will login to the system using his user ID and password. User will enter current temperature; humidity and wind, System will take this parameter and will predict weather from previous data in database. The role of the admin is to add previous weather data in database, so that system will calculate weather based on these data. Weather forecasting system takes parameters such as temperature, humidity, and wind and will forecast weather based on previous record therefore this prediction will prove reliable. This system can be used in Air Traffic, Marine, Agriculture, Forestry, Military, and Navy etc. A simulated system is developed to predict weather conditions and Minimum support price (MSP) of crops in India. Originally developed in the context of climate change impacts on agriculture using crop simulation modelling were soon adopted by the research community interested in inter-annual climate prediction

I. 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 and wind. This system is a web application with effective graphical user interface. User will login to the system using his user ID and password. User will enter current temperature; humidity and wind, System will take this parameter and will predict weather from previous data in database. The role of the admin is to add previous weather data in database, so that system will calculate weather based on these data. Weather forecasting system takes parameters such as temperature, humidity, and wind and will forecast weather based on previous record therefore this prediction will prove reliable. This system can be used in Air Traffic, Marine, Agriculture, Forestry, Military, and Navy etc. A simulated system is developed to predict weather conditions and Minimum support price (MSP) of crops in India. Originally developed in the context of climate change impacts on agriculture using crop simulation modeling were soon adopted by the research community interested in inter-annual climate prediction. At the simplest level, crop models could be driven with historical time series of observed climate data and results using Machine learning techniques.

II. RELATED WORK

1. Weather Forecasting Using Machine Learning

Weather soothsaying is the attempt by meteorologists to prognosticate the rainfall conditions at some unborn time and the rainfall conditions that may be anticipated. The climatic condition parameters are grounded on the temperature, wind, moisture, downfall and size of data set. Then, the parameters temperature and moisture only are considered for experimental analysis. The data is collected from the temperature and moisture detector called DHT11 detector, which helps in detecting the temperature and moisture values of a particular region or position. The jeer pi is used for storing the collected data to the pall, with the help of Ethernet guard for uploading the data online. The data stored in pall is generated in the form of CSV, JSON, XML lines which is used for farther

analysis. The correlation analysis of the parameters helps in prognosticating the future values. The ARIMA model that gives better results for time-series data is used for prognosticating the values for forthcoming.

2. Minimum Support Price Prediction Of Crops

In 2016, Aaron Ciaghi et al. [2] Through his research, he explained that even though there is a lot of charity, a lot of Agriculture is the most fundamental and essential occupation for every human being. Without agriculture there is no living being, au is chained through web of life. In India agriculture is the main occupation, around 67% of people involving in agriculture. Inventors release many smart technologies in the entire field like health sector, automobiles, education, etc. to improve our life styles and make our work easy. In the same way farmers also started to use smart technologies in the field of agriculture to improve the cultivation productivity. Recently the cities are transformed to smart cities through advanced technologies; similarly agriculture also turns slowly into technology enabled farming. Many farmers practicing green farming technologies to improve the production rate. In this regards, this paper proposes a model to select the appropriate crop for cultivation and predict the production rate using the weather parameters which are very much influencing the agriculture. Random Forest algorithm is the widely used machine learning algorithm for classification and prediction. The outcome of Random Forest is compared with Support Vector Machine algorithm. The authors concluded that the proposed model works on average accuracy of 90%.

3. Weather Forecasting using Machine Learning

The conditioning of numerous primary sectors depend on the rainfall for product,e.g. husbandry. The climate is changing at a drastic rate currently, which makes the old rainfall vaticination styles less effective and more excited. To overcome these difficulties, the bettered and dependable rainfall vaticination styles are needed. These prognostications affect a nation's frugality and the lives of people. To develop a weather forecasting system that can be used in remote areas is the main motivation of this work. The data analytics and machine learning algorithms, such as random forest classification, are used to predict weather conditions. In this paper, a low-cost and portable solution for weather prediction is devised.

III. METHODOLOGY

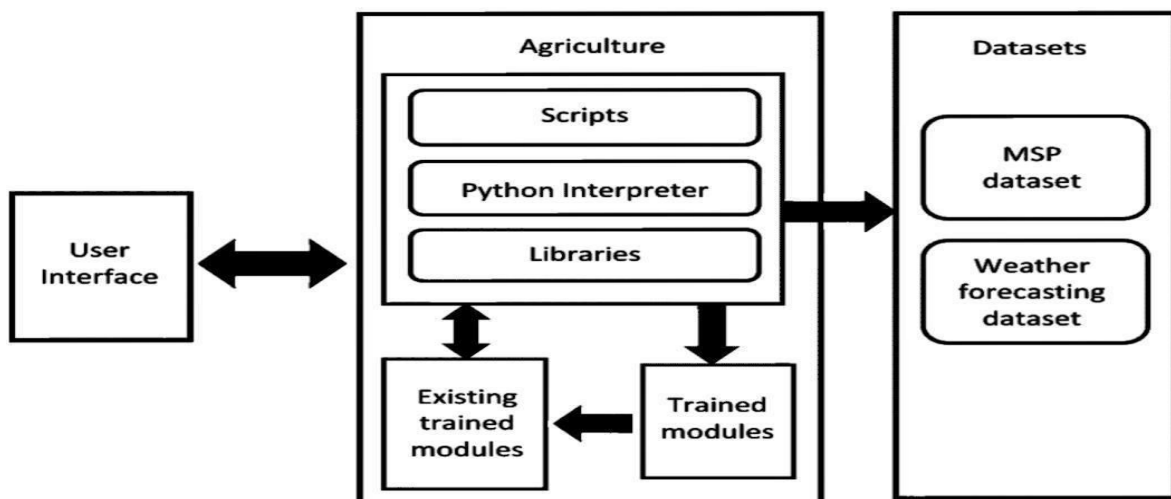


Fig:3.1 Architecture of Weather Forecasting

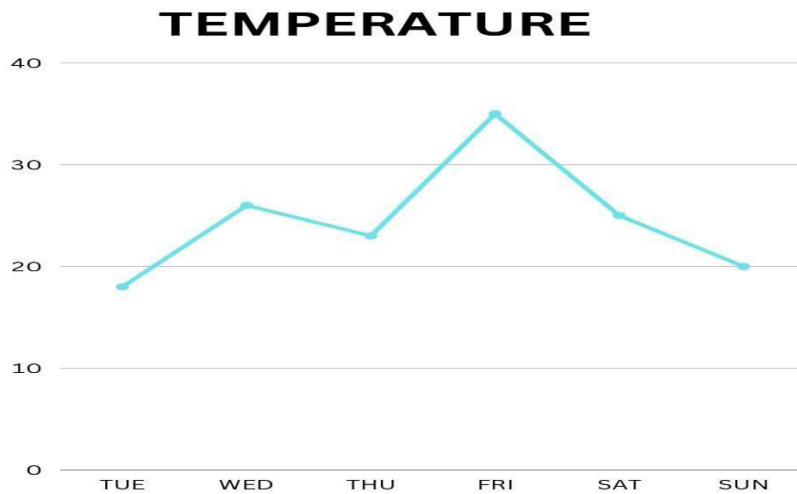


Fig:3.2 Temperature Graph

Functional Requirements

In software engineering, functional requirements define the functionality of a software system or its components. A function is described as a set of inputs, behaviors, and outputs. Functional requirements may include calculations, technical details, data manipulation and processing, and other specific functions that define what the system must do. Functional requirements define the functionality of a software system or its components. This captures the intended behavior of the system. This behavior is defined in terms of services, tasks, or functions that the system must perform.

Non-functional requirements define criteria that can be used to evaluate system performance rather than specific behavior. This is a metric used to measure the performance of a developing system. The performance of the project is analyzed at this stage and a business proposal is presented for the project with a general plan and some costs. Three main ideas related to the feasibility study

- Usability: Simplicity is the key here. A system should be simple enough that people like to use it, but not so complex that people don't use it. Users should be familiar with the user interface and should have no problem migrating to a new system and a new environment. Menus, buttons, and dialog boxes should be named so that their functionality is clearly understood.
- Reliability: The system must be reliable and dependable in providing functionality.
- Productivity: The system will be used by many people at the same time. Productivity is a major concern. If multiple users are going to use it at the same time, the system should not fail. It should provide quick access to all users.
- Scalability: The system can be extended to include new functions later on. There must be a common channel that can accommodate the new function.
- Management: System monitoring and maintenance should be simple and objective.
- Portability: The system should be easily brought to another system.
- Reusability: A system that can be used as part of a different system without requiring a lot of work, should be divided into several modules.
- Security: Security is a primary concern. This system should not allow unauthorized users to access other users' information

Domain and UI Requirements:

- **Admin Login:-** Admin Login using Admin ID and Password.
- **Add previous weather data: -** Admin will add previous weather data to the database.
- **User Login:-** User can login using username and password.



- **User registration:-** Users can register themselves by filling out the registration form.
- **Input parameters:-** In this module, the user will input parameters like temperature, humidity and wind.
- **Weather Forecast: -** In this module, the system will take the parameters currently entered by the user and compare the parameters with the data in the database and predict the weather.

IV. RESULTS

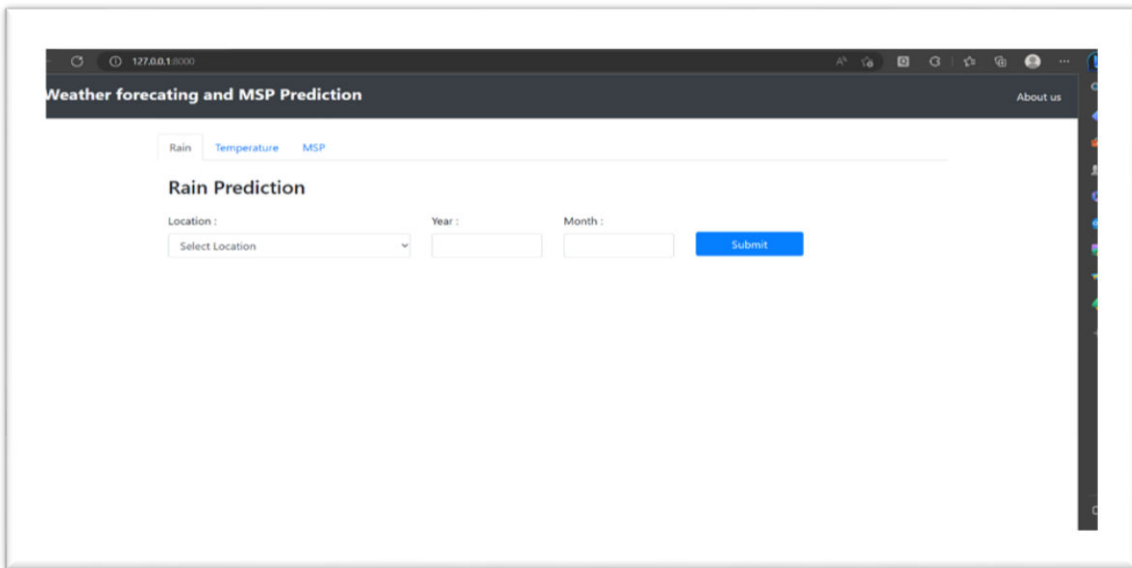


Fig 4.1 Framework Of Weather Forecasting.

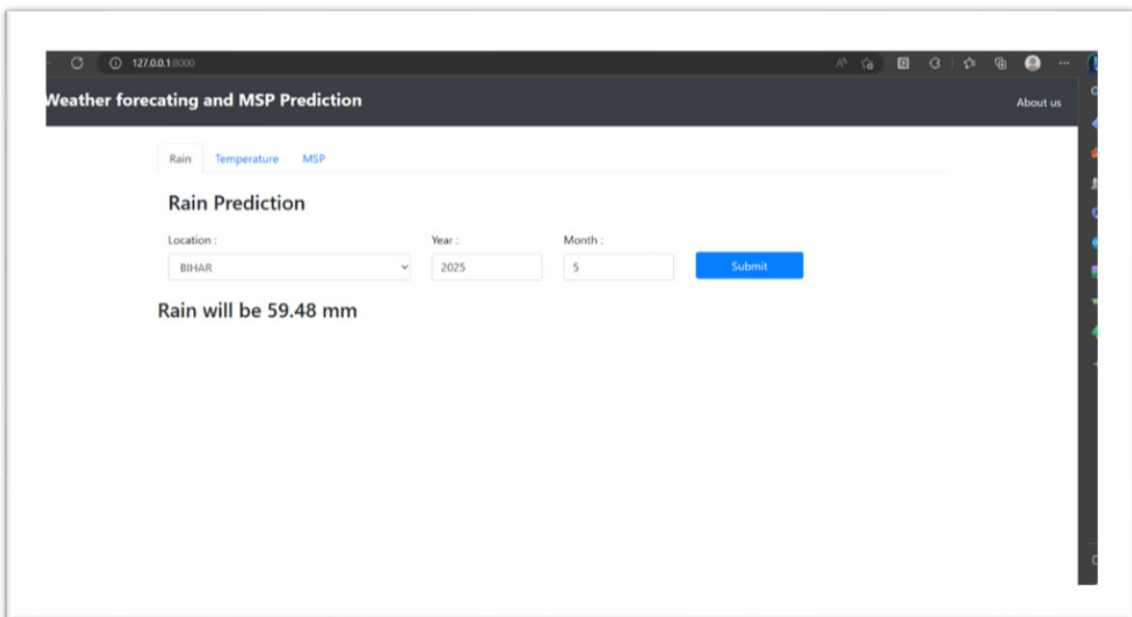


Fig 4.2 Rainfall Prediction

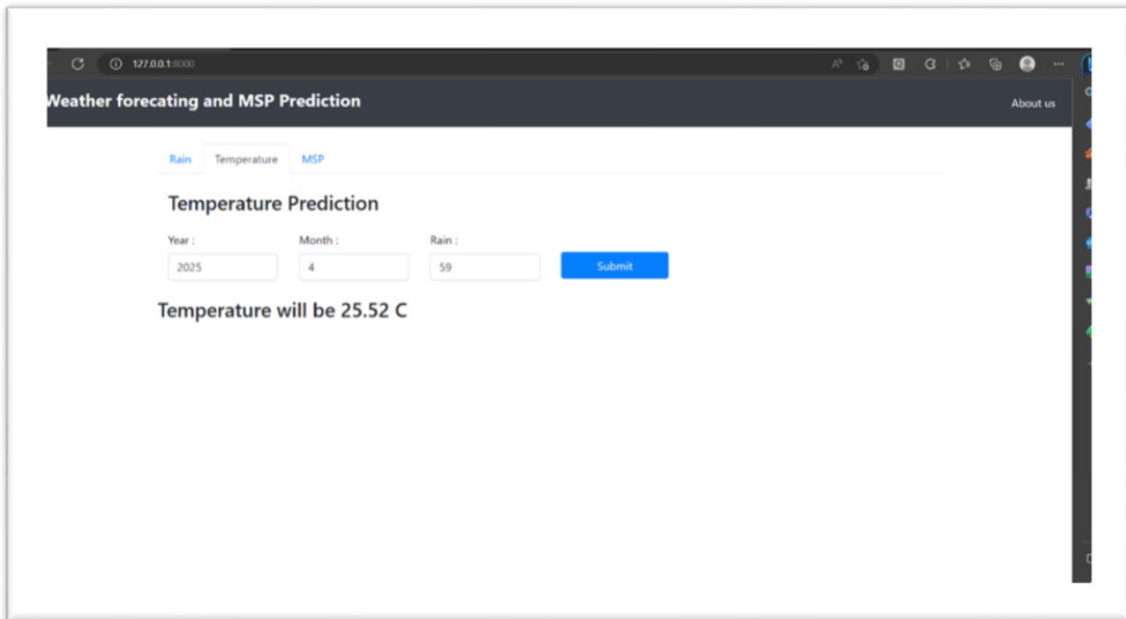


Fig 4.3 Temperature Prediction

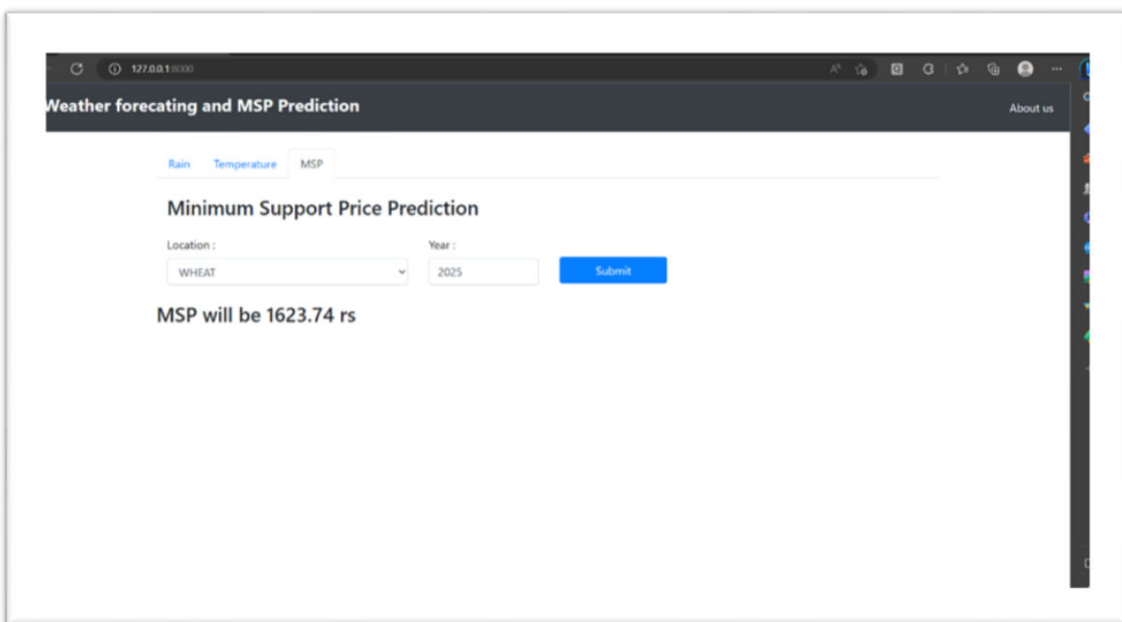


Fig 4.4 MSP Prediction of Crops

V. CONCLUSION

Predicting crops for cultivation in agriculture is a difficult task. This paper has used a range of feature selection and classification techniques to predict yield size of plant cultivations.

The results depict that an ensemble technique offers better prediction accuracy than the existing classification technique.



Forecasting the area of cereals, potatoes and other energy crops can be used to plan the structure of their sowing, both on the farm and country scale. The use of modern forecasting techniques can bring measurable financial benefits.

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