

Group 2

AGRICULTURAL DATA ANALYSIS

Federal Institute Of Science And Technology



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Abstract

In Agricultural sector where farmers and agribusinesses have to make innumerable decisions everyday and intricate complexities involves in the various factors influencing them. An essential issue for agricultural planning intention is the accurate yield estimation for the numerous crops involved in the planning. Data mining techniques are necessary approach for accomplishing practical and effective solutions for this problem. In this project we are checking the various climate attributes in a particular place, the same is retrieved using openweathermap API. After retrieving the climate attributes then store the datas in a server. The importance of storing datas in the server is that of the use of datas for the future reference.

Introduction

Today, India ranks second worldwide in the farm output. Agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India. Agriculture is a unique business crop production which is dependent on many climate and economy factors. Some of the factors on which agriculture is dependent are soil, climate, cultivation, irrigation, fertilizers, temperature, rainfall, harvesting, pesticide weeds and other factors. Historical crop yield information is also important for supply chain operation of companies engaged in industries. There are 2 factors which are helpful for the farmers and the government in decision making namely:

- a. It helps farmers in providing the historical crop yield record with a forecast reducing the risk management.

- b. It helps the government in making crop insurance policies and policies for supply chain operation.

Data mining technique plays a vital role in the analysis of data. Data mining is the computing process of discovering patterns in large data sets involving methods at the intersection of artificial intelligence, machine learning, statistics, and database system.

Chapter 1

Tasks

1.1 Task No:1

Weather Forecasting Application

1.1.1 Date of the task given:

17 August 2017

1.1.2 Objectives

- What is the main goal of this app? To predict the conditions of the atmosphere for a given location
- Is it track climatic conditions of any location? Using this app we can get the full atmospheric details of any place in this world
- How can we get the weather details of a particular location? We can connect our app with an OpenWeatherMap API

1.1.3 Algorithm

Input:

Enter the location for weather search

Output:

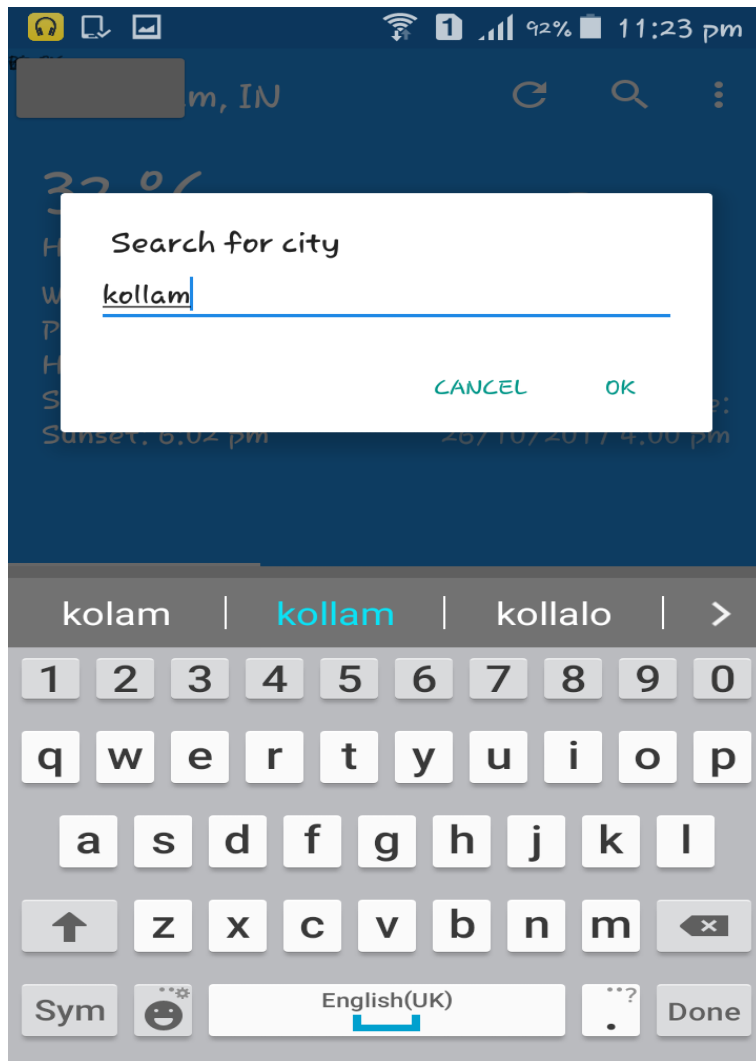
Display the temperature,humidity from Open-WeatherMap API

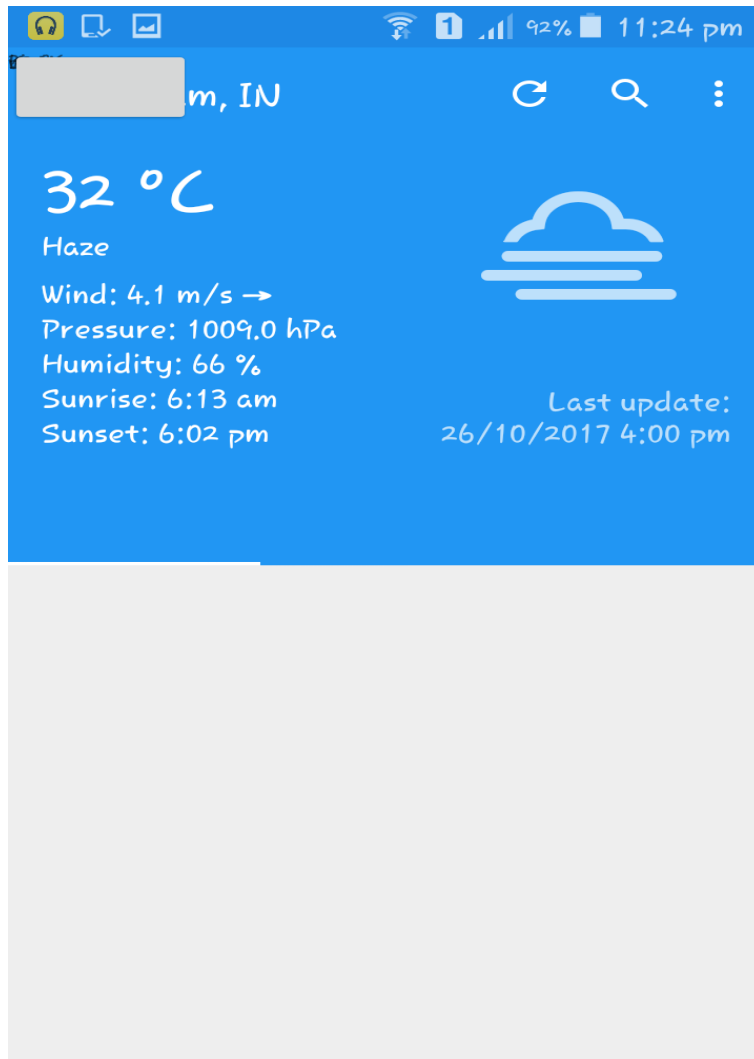
1. Start
2. Set User permission to access internet
3. Create the Text field for entering the location
4. Create five Labels for display the city,temperature,pressure,wind and humidity
5. Create the Button for Search
6. Use an API for retrieving the weather details
7. Display the Weather details on clicking search button
- 7.1. Search the city from API
- 7.2. Load corresponding data as JSON
8. Refresh download weather data while click on refresh button
9. Stop.

1.1.4 Task completed Date

25th August 2017

Output





1.2 Task No:2

Saving displayed weather details of each place to a server

1.2.1 Date of task given:

25 August 2017

1.2.2 Objectives

- How the displayed data can be stored into a database?
- How the stored datas can be displayed on screen?

1.2.3 Algorithm :

Input:

Displayed data about the given city

Output:

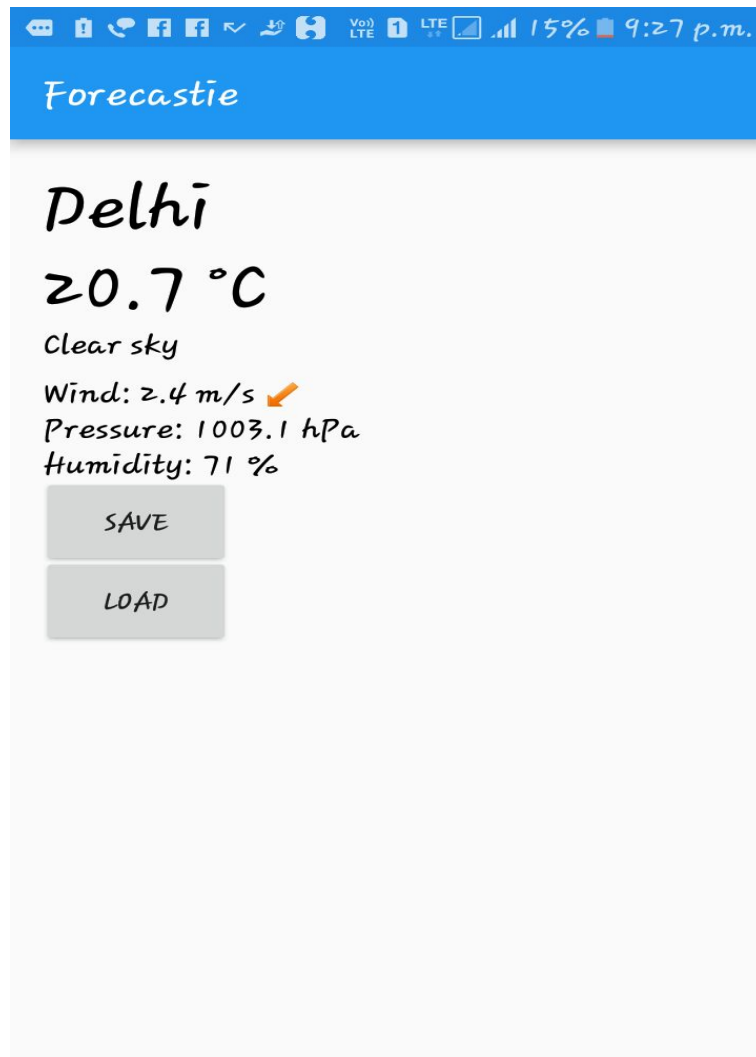
Save the data displayed on the screen in to sqlite database

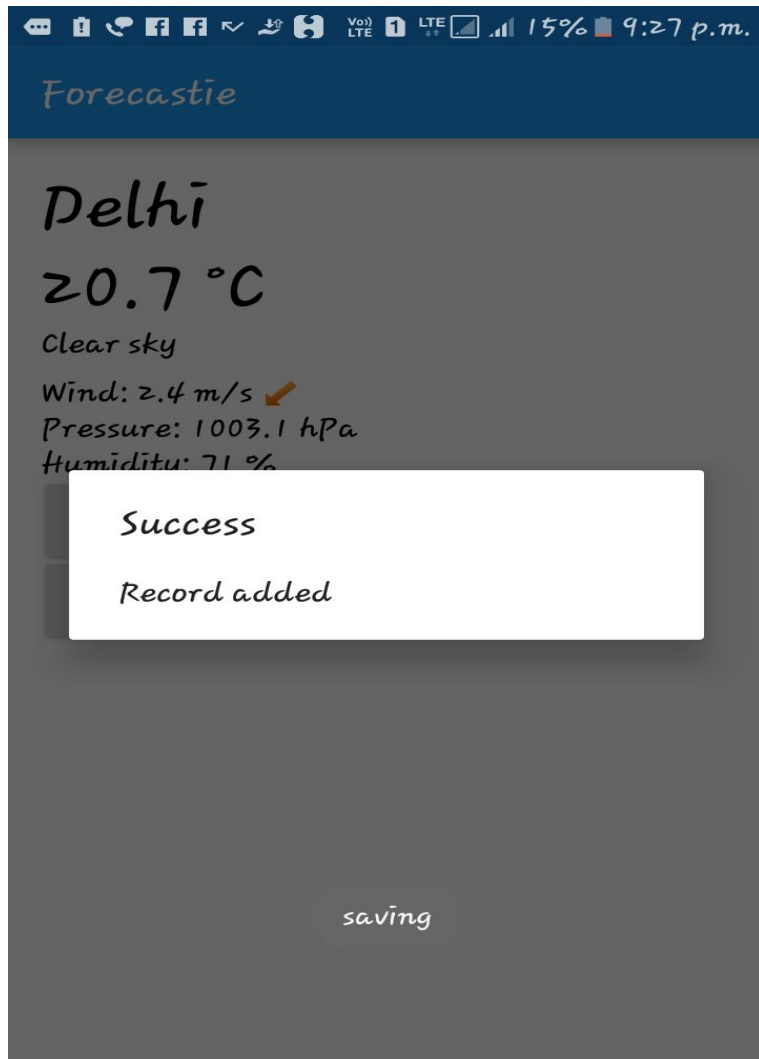
1. Start
2. Load the searched weather datas in to a new activity
3. Create the Button for save and display
4. Fetch the values and save the contents into a database using queries
5. Display the Weather details in to a report
6. Stop

1.2.4 Task completed Date

26th October 2017

Output





VoLTE 1 LTE 15% 9:28 p.m.

Weather Details

City: Cochīn
Description: Haze
Temperature: 31 °C
wind: Wind: 5.1 m/s →

Pressure: Pressure: 1008.0 hPa

Humidity: Humidity: 70 %

City: Kumbakonam (2.7 mm)
Description: Light rain (2.7 mm)
Temperature: 28.4 °C
wind: Wind: 1.4 m/s ↘

Pressure: Pressure: 1020.1 hPa

Humidity: Humidity: 79 %

City: Irinjālakuda
Description: Haze
Temperature: 31 °C
wind: Wind: 5.1 m/s →

Pressure: Pressure: 1008.0 hPa

Humidity: Humidity: 70 %

1.3 Task No:3

Rainfall Prediction Using Decision Tree Algorithm

1.3.1 Date of task given:

3rd October 2017

1.3.2 Objectives

- What is the main goal of this algorithm?
To predict the conditions of the atmosphere for a given location
- Is it for classify the given dataset?
Using this algorithm it can classify the given dataset into multiple class
- How can we classify?
Can classify the datasets as moderate rainfall , medium and high rainfall locations

1.3.3 Algorithm

Input:

Weather Data set from Data.gov website

Output:

Predicting class rain or not for given dataset using decision tree algorithm

1. Start
2. Import the packages
3. Read the dataset
4. Split the dataset as train data and test data
5. Classify data to different classes
6. Repeatedly split datas until whole datas belong to a class
7. Stop

Chapter 2

Algorithm Implemented

Decision Tree Algorithm

Decision Tree algorithm belongs to the family of supervised learning algorithms. Unlike other supervised learning algorithms, decision tree algorithm can be used for solving regression and classification problems too.

The general motive of using Decision Tree is to create a training model which can use to predict class or value of target variables by learning decision rules inferred from prior data(training data).

The understanding level of Decision Trees algorithm is so easy compared with other classification algorithms. The decision tree algorithm tries to solve the problem, by using tree representation. Each internal node of the tree corresponds to an attribute, and each leaf node corresponds to a class label.

2.1 Why Decision Tree?

- Decision trees are powerful and popular tools for classification and prediction.
- Decision trees represent rules, which can be understood by humans and used in knowledge system such as database.

2.2 Strength of using Decision Tree

- perform classification without much computation.

- can handle continuous and categorical variables
- provide a clear indication of which fields are most important for prediction or classification

Chapter 3

Roles Assigned

Aishwarya Raj is the scrum master. She used to conduct scrum meetings frequently to know and understand the status of the tasks based on weather application and discussed about the task in detail. She assigned the roles for each members of the group. Creation of algorithm and code analysis was done by her. The execution of the code was done by Aishwarya. She searched the new code in python and study the concepts and explained the steps to the group members in detail.

Don C Alosious was selected as the team leader. He searched the code for weather application and completed the design and also provided the technical support for the application. Don helped in finding the errors in the code. Installation of packages and error checking, validate code with training datas were done by Don.

Aneena K Bijy installed the software on her laptop and configure her laptop. She searched for the new code for weather application. She studied the code and explained to the group members. She also found the code for database. She analyzed working of algorithm and ho much it suits for the weather based application. Code execution and error checking was also done. She also helped in making the reports. She created the git repository and add all the reports and code to it

Heera T Mohan installed the softwares on devices and searched the code for weather application. She made a trial execution of the code and found the errors and understood the concept. She identified the technique, studied the concept and explained it to the group members. She also searched

the code analyze working of used algorithm. She also helped in making the Presentations. She helped to find out the datasets

Juhi Jojo searched the code for the android program. And executed the code. She downloaded the database for weather application and searched the code for saving and displaying the weather details. She also studied and executed the code based on sample set and explained it to group members. She helped to find out the relevant dataset from the government recognized site so that rain can be predicted. She also helped in making the reports.

Simi Jose also searched the code for android program and executed the code. She learned and studied the concept. She did a trial execution of the code. And also studied and executed the code based on sample dataset. She also helped in finding the errors and studied about how to cope up with that errors. She also helped in making the reports.

Chapter 4

Proof of Concept

As we know there are several applications available in mobile phones showing the current weather conditions. The weather conditions including the temperature, humidity, speed of wind etc... The limit is that it can only be used for showing the climatic conditions at that moment. In our Agricultural data analysis application we are saving the data into a server so that it can be used for the future references. This data is useful when we want some crops to be cultivated in a particular region. According to farmers' mindset he/she wants his/her crop to be cultivated at the best time, so these data can show how appropriate the present condition is so as to get his crop at high yield.

Conclusion

data mining techniques are implemented on the input data to assess the best performance yielding method. The present work used data mining technique such as Decision tree Algorithm. We are here predicting the rainfall that helps the farmers for cultivating their crops according to the type of the crop. The proposed work can also be extended to analyse the soil and other factors for the crop and to increase the crop production under the different climatic conditions.

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