

Weather Prediction App

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Abstract: Weather forecasting is a vital application in meteorology and has been one of the most scientifically and technologically challenging problems around the world in the last century[1]. In this project, we investigate the use of data mining techniques in forecasting maximum temperature, rainfall, evaporation and wind speed, Humidity, Visibility, Sea level press. This was carried out using Decision Tree algorithms and meteorological data collected between 2013 and 2017. A data model for the meteorological data developed and this was used to train the classifier algorithm. The result of these algorithm were compared and the algorithm which gave the best results used to generate classification rules for the mean weather variables. This Weather forecasting App is more efficient than existing methods. The results show that given enough case data, Data mining techniques can be used for weather forecasting and climate change studies

Keywords—Weather prediction, Random Forest & SLIQ,

I. Introduction

Weather notifications are more important because they are used to protect life and property. Forecasts based on temperature and precipitation are important to agriculture, Air traffic, Military Applications, marine and therefore to traders within commodity markets. Temperature predictions are used by companies to estimate demand over coming days. On an everyday basis, people use weather forecasts to determine what to wear on a given day; therefore we are developing an Weather forecasting app which uses concept of DataMining.

In data mining, we use different types of algorithms to predict the class label that may be used to make valid prediction. In this proposed app we investigate historical data from 5 years and forecasting maximum of temperature, rainfall, evaporation and wind speed.

II. Literature Survey

After initial work of Walker several attempts by Gowariker et al., Thapliyal et al., have been mad for developing better models for long-range forecasts of summer monsoon rainfall in India. Performance of the gowariker et al., Rajeevan et al., thapliyal et al., regression models based on different sets of predictors have found to be satisfactory and reasonably accurate during last eleven year. These models are being extensively used by IMD for long range forecasts of summer monsoon rainfall over India as a whole. Recently IMD has been trying to forecast for Indian sub regions and issuing long range forecast for three broad homogeneous regions of India, viz., northwest India, Northeast India and the Peninsula through the updated three individual power regression models based on different sets of predictors. However, Guhathakurta found these statistical models to be successful in these years of normal monsoon rainfall and failed remarkably during the extreme monsoon years like 2002 and 2004.

Working of Weather Prediction

Firstly, the Weather Prediction App will operate on the Android. The App Consist of User Registration And Login details of user These App is Connected to The Weather details that is Maintained by the admin. So we have the Back Panel where the Admin can Update the Database by adding historic weather data (last 5 years). The Data that the user will receive will be Predicted by Mining Algorithms(Random Forest and SLIQ) These Predicted data can be Approx as its predicted on historic datasets. The App Will Only allow user to see the Current Weather and can plan his/her day accordingly

Ease of use

The hardware or software setup required is that the proposed system can be easily run on any dual core smartphone and as the software used to build system is Php in windows 98/2000/XP/7 or we can build this in

Linux/GNU also. So it does not cost high. One of the objectives of this app apart from speeding of the operation is that users do not face any problem while making any plans depending on the weather.

Uses of Weather Prediction App

Weather forecasting is the application of science and technology to predict the state of the atmosphere for a given location. Human beings have attempted to predict the weather informally for millennia, and formally since the nineteenth century. Weather forecasts are made by collecting quantitative data about the current state of the atmosphere at a given place and using scientific understanding of atmospheric processes to project how the atmosphere will change. Once an all-human endeavor based mainly upon changes in barometric pressure, current weather conditions, and sky condition, weather forecasting now relies on computer-based models that take many atmospheric factors into account. Human input is still required to pick the best possible forecast model to base the forecast upon, which involves pattern recognition skills, teleconnections, knowledge of model performance, and knowledge of model biases. The chaotic nature of the atmosphere, the massive computational power required to solve the equations that describe the atmosphere, error involved in measuring the initial conditions, and an incomplete understanding of atmospheric processes mean that forecasts become less accurate as the difference in current time and the time for which the forecast is being made (the range of the forecast) increases. The use of ensembles and model consensus help narrow the error and pick the most likely outcome. There are a variety of end users to weather forecasts. Weather warnings are important forecasts because they are used to protect life and property. Forecasts based on temperature and precipitation are important to agriculture, and therefore to traders within commodity markets. Temperature forecasts are used by utility companies to estimate demand over coming days. On an everyday basis, people use weather forecasts to determine what to wear on a given day. Since outdoor activities are severely curtailed by heavy rain, snow and the wind chill, forecasts can be used to plan activities around these events, and to plan ahead and survive them.

III. Expected Results

Temperature, Humidity, Sea Level, Wind, etc. Data mining approach for weather prediction model is data intensive model rather than compute intensive. Our model proves to be almost nearly accurate model in comparison with well established compute intensive models. Being using data mining approach, compute overhead is reduced, results very large data processing very much efficient. The model can be deployed on commodity hardware; do not demand high performance cluster or supercomputing environment. The model has simplicity, good prediction performance, and can be used for both binary and multiclass prediction problems. The Bayesian prediction model can easily learn new classes. The accuracy will grow with the increase of learning data. As the training dataset is very large, the model returns good prediction results. The negative part of model is, when a predictor category is not present in the training data, the model assumes that a new record with that category has zero probability. This could be a major issue if this rare predictor value is important. The accuracy of the model can be addressed by making hybrid model of multiple data mining approaches, or even combining compute based models with the data mining models. The performance of the model can also be improved by designing the model for scalable platforms, either for vertical scalability or for horizontal scalability.

IV. System Design

[Fig. Block diagram of Weather prediction app]



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V. Conclusion

All sectors whether private or public get affected to sudden weather changes, having at least near to accurate prediction of weather can generate huge impact and reduce losses. With the help of this software we can work towards achieving this goal. We'll prepared notifications in our application. In that scenario, it is often useful to notify the client of certain events (such as new bridge collapse accident, plane crash, flights cancelled, etc.), and so it is convenient to have a way to communicate this information to the users without requiring the client to request it. Also we'll prepared Online chat that may refer to any kind of communication over the Internet that offers a real-time transmission of text messages from a user to admin. This feature may address point-to-point communications as well as multicast communications from one sender to many receivers.

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