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Efficient Peer-to-Peer Content Delivery: A Comprehensive Analysis and Performance Enhancement

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A B S T R A C T

We Are Trusted For Our Services P2P delivery is proud to be the fastest growing Pick & Drop service providing company. Our focus area is to reduce day to day movement of people who are short on time. Our concept helps organizations, individuals and business persons in performing their pickup & drop related tasks through our "Taskers". People can outsource their pickup & drop related tasks to our very own reliable and trusted "Taskers" nearby them with just a single click. P2P delivery is proud to be Most Trusted Delivery Services according to Google Ratings and deals in immediate pickup and delivery services. P2P delivery is known to provide these services with very hi-tech web and mobile app. technology. Currently we are operating in Delhi-Ncr and soon planning to launch Pan India

Keywords: Chi Square, Classification, Naïve Bayes, Prediction, Weather Forecasting

Introduction

The person to person (P2P) on-demand delivery service will allow customers to exchange food, groceries or medicines with their family and friends who are unable to step out of their homes for essentials or have run out of certain essential items owing to the current situation. Sometimes you require a personal service to send or receive something important like a passport or a cheque but don‟t have the time to do it yourself. You can‟t delegate such important task to a normal courier service. In such case you can trust on this services. P2P is highly convenient and hassle free. You can also track your order status if you book your task through This app. This app makes sure your parcel reaches your place on the very same day.

Project design is an early phase of the project where a project's key features, structure, criteria for success, major deliverables are all planned out. The aim is to develop one or more designs that can be used to achieve the desired project goals.

The project design that we would be taking forward is divided into modules and sub-modules. In the front end which is user accessible would be basically a web application.

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The scope of the project is the system on which the software is installed, i.e. the project is developed as a desktop application, it will work for a particular institute or organization. But later on the project can be modified to operate it online. The intention of developing weather app is to fetch the data in the need of taking information about weather worldwide. Another purpose for developing this software is to generate the report automatically at the end of the session or in the between of the session or in the between of the session as they require We Are Trusted For Our Services P2P delivery is proud to be the fastest growing Pick & Drop service providing company. Our focus area is to reduce day to day movement of people who are short on time. Our concept helps organizations, individuals and business persons in performing their pickup & drop related tasks through our "Taskers". People can outsource their pickup & drop related tasks to our very own reliable and trusted "Taskers" nearby them with just a single click. P2P delivery is proud to be Most Trusted Delivery Services according to Google Ratings and deals in immediate pickup and delivery services. P2P delivery is known to provide these services with very hi-tech web and mobile app. technology. Currently we are operating in Delhi-Ncr and soon planning to launch Pan India.

Related Work

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In the most recent decade, numerous significant efforts to solve weather forecasting issue utilizing statistical modeling including machine learning systems have been reported with successful results.[8-13] Different Methods has beeutilized in Weather Prediction System, for example, neural network-based algorithm utilizing Back Propagation Neural Network (BPN) and Hopfield Network,[5] Recurrence Neural Network (RNN), Conditional Restricted Boltzmann Machine (CRBM), Convolutional Network (CN) models,[8] Artificial Neural Network and Decision tree Algorithms,[6] predictive analysis in Apache Hadoop Framework utilizing Naive Bayes Algorithm.[4]

BPN and Hopfield Network

In this work Back Propagation Neural (BPN) Network is utilized for initial modeling. The outcomes acquired by BPN model are sustained to a Hopfield Network. In BPN, the info and yield layer comprises of 3 neurons where as the hidden layer has 5 neurons and Hopfield Network display work with the assistance of training data set.[5] The system must perform Temperature or Wind Speed or Humidity flow with the end goal to establish equilibrium. This procedure will proceed iteratively and in every iteration bias and weight esteems should be updated until it converges.

RNN, CRBM and CN Models

The goal of this work is to investigate the capability of profound learning technique for weather forecasting. The investigations, on deep networks,[14] on energy-based models[15] have progressed toward becoming establishments for the emerging deep learning as deep architecture generative models in the most recent decade. Three climate estimating models will be investigated in this examination which are in particular: (I) Recurrence Neural Network (RNN), (ii) Conditional Restricted Boltzmann Machine (CRBM), (iii) Convolutional Network (CN).[8] Every one of these models will be prepared and tried utilizing the predetermined weather dataset. Parameter learning algorithm for each model, for instance: gradient descent for CRBM and CN, is executed to gain testing error below the predetermined threshold value and compared with the prominent time series forecasting models for example, Recurrent NN.

ANN and Decision Tree

Artificial Neural Networks (ANN) and Decision Trees (DT) were utilized to analyze meteorological data, accumulated with the end goal to develop classification rules for the Application of Data Mining Techniques in Weather Prediction. There are three fundamental components of a neuron model, which are, (i) an arrangement of synapses, interfacing links, every one of which is considered by a weight/strength of its own (ii) an adder, for summing the info signals, weighted by particular neuron's neural connections (iii) an activation function, for restricting the amplitude of neuron's yield.[6] The MLP network is prepared through the back-propagation learning algorithm. The Prediction is performed through Decision tree.

Naive Bayes algorithm utilizing Hadoop

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set to evaluate chance with a specific arrangement of conditions to allocate a score or a weight. Here, Apache Hadoop Framework and Map Reduce Framework are utilized to decrease the data and Naïve Bayes Algorithm is utilized in classification and prediction.[4] Naïve Bayes Algorithm is classification technique based on Bayes Theorem. Naïve Bayes is anything but difficult to assemble and especially valuable for expansive datasets. It is exceptionally utilized in different looks into which contains substantial datasets, for example, Disease prediction.[1]

Hadoop is open source programming and it is accustomed to storing large data set in a distributed computing environment, Hadoop makes it conceivable to run

applications on system with several hardware nodes. The Hadoop Distributed File System (HDFS) is like the Google File System (GFS) and it utilizes large cluster of data and it gives appropriated distributed file system, fault- tolerant way

Methodology

In this paper, the system predicts the future weather conditions based on current weather data. The data mining techniques namely Chi square test and Naïve Base statisticsare applied on the dataset to extract the useful information from the dataset. The System Methodology shows in Figure 1.

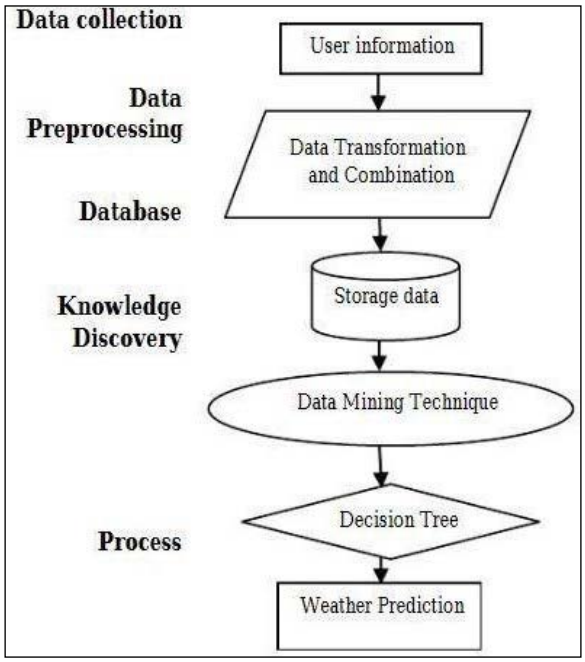

Figure 1

Data Collection and Preprocessing

The initial stage in data mining process is data collection and preprocessing. The crucial stage is data preprocessing, because only valid data will yield accurate output. The data is used in this project collected from users. Though the data set contained many attributes, data preprocessing step considered only the relevant information, ignoring the rest. Then data transformation performed, into a format, which is suitable for Data mining. Four Attributes are used to identify the Weather Forecasting .They are Shown in a table below: It is to find out the Class Level of Weather Forecast where, Class Levels are Good or Bad.

Database

The Transformed dataset is store in database that is collected from user. So, there is no prviously stored store is in use.

After real time data collection, Data mining techniques applied to predict weather condition.

Data Mining Technique

In this work, data classification is performed using two data mining technique: Chi square test and Naive Bays Statistics. The data which have to be classified is called training dataset, is fixed. By using this data with testing data, Weather Forecast will be possible. The algorithm of chi square and naïve bays finds relationships between the values of the predictors and the values of the target. The model learns from the training set detecting hidden phrase patterns and more investigations need to be done to identify, build and incorporate knowledge lich linguistic resources that have a focus on detecting emotions.

Chi Square Algorithm

Chi Square Algorithm is a predictive technique used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. The Equation is as follows:

Class:

C1: Weather Forecasting = „Good", C2: Weather Forecasting = „Bad".

To find the class, Ci that maximizes P (X| Ci)*P (Ci)compute: P(Weather = Good | x) P(Weather=Good). [P(O = s | Weather = Good) · P(T = c | Weather = Good). P(H = h | Weather = Good) · P(W = t | Weather = Good)] P(Weather = Bad | x) P(Weather=Bad) · [P(O = s | Weather = Bad). P(T = c | Weather = Bad) · P(H = h | Weather=Bad). P(W = t | Weather =Bad] IF P(Weather= Good| X) < P(Weather = Bad | X), so classify X as Weather= Bad Otherwise, Classify X as Weather=Good.

Thus using the above probability prediction of the future chances of weather good or bad will be easy.

Decision Tree

The decision Tree generated from training data is helpful in making prediction. Construction of the decision tree is done by selecting the best possible attribute that will be able to split set of samples in most effective manner. The decision tree for this proposed system is figured below in Figure 2.

$\chi c = \Sigma(Oi-Ei)$

/Ei where, The subscript "c" is the degrees of freedom, "O" is 2 observed value and "E" is expected value. A chi square (X) statistic is used to investigate whether distributions of categorical variables differ from one another. In our project we use chi square statistic to determine the best attribute of weather forecast.

Naïve Bayes Algorithm

Naïve Bayes Algorithm is a classification technique based on Bayes Theorem. Naïve Bayes is easy to build and very much

useful for large datasets. By using the Naïve Bayes equation we can find the future probability [12].The Equation is as follows:

Where, (c|x) is future probability of class(c, target), P(c) is the prior probability of the class, P(x|c) is the likelihood which is the probability of predictor given class, P(x) is the prior probability of predictor.

The condition of predicting weather of our project is as follows:

Design and Analysis

This topic incorporates the methodology within the design of the system. This system analyzes and measures weather data.

The architecture is given in fig.3, clarifies the working model of the project. The Architecture characterizes the behavior, structure and perspectives of our system. short messaging language word as the word with minimum and is determined as the whole of correct classifications edit distance value.[18]

Here, the job admin is to upload the data, for example, impact of the Outlook, Temperature, Humidity, Windy and preventive measure and upload the dataset to system. Then again at a customer side client need to register to the application. After the login client gets the present weather condition. To predict the weather conditions in the proposed system, the data mining algorithms has been utilized. In order to predict the next weather condition or upcoming weather condition the system required to take input of the weather conditions, based on the client input generate the next possible outcome of weather condition. To partition the information and to locate the weather condition Chi square test and Naive bayes are used here. After that final prediction.

Experimental Result and Analysis

The analysis and prediction of weather forecast are implemented using Java Language and using by tool of Eclipse and all data are stored by MySql server. Chi square test summarizes the difference between our data and our independence hypothesis.

Accuracy

In this Project, Accuracy is the general rightness of the model Chi square test is used to assess the observed value are significantly different from the expected value based on input attributes of the Training set .The model train the probability that a chi-square statistic having 2 degrees of more or less than significant level. Figure 4 depicts that the value of all method produces higher accurate outcomes when contrasted with traditional weather forecasting model.

Mehrnoosh Torabi, Sattar Hashemi, “A Data Mining Paradigm to Forecast Weather”, The 16th CSI International Symposium on Artificial Intelligence and separated by the aggregate number of classifications. Accuracy = (TP + TN)/ (TP + TN + FP + FN).

Precision is a proportion of the accuracy gave that an explicit class has been predicted. It is characterized as Precision = TP/ (TP + FP) Where, TP and FP are the numbers of true positive and false positive predictions for the considered class.

Recall is a proportion of the capacity of a prediction model to choose examples of a specific class from a data set. It is likwe ise called sensitivity, compares to the True positive rate.

Recall = Sensitivity = TP / (TP + FN)

Where, TP and FN are the numbers of true positive and false negative predictions for the considered class.

The System is computed and demonstrated utilizing the figure 6. In this figure the X axis contains the methods implementedand the Y axis demonstrates the percentage accuracy of the system. As indicated by the acquired execution the proposed attribute is more than significant level .Then system classifies dataset using Naïve bayes procedure. Naïve bayes calculating. an estimate for the class probability from the training set.

Conclusion

This paper works with mix of Naïve Bayes and Chi Square algorithm to predict weather condition. The constant information i.e. time-series data is assembled and analysis is performed on this dataset utilizing an interface named Weather Prediction System, developed utilizing Java using Eclipse tools. This framework arranges the given information into various classifications and furthermore predicts the risk of the weather prediction of obscure example is given as an input. The system can be filled in as training tool for Meteorology Students. This methodology can decide the non-linear relationship that exists between the historical data (temperature, wind speed, humidity, so forth.,) provided to the system during the training phase and on that premise, make a prediction of what the weather would be in future. The Future work of this project is to incorporate more attribute of weather condition to predict and to work with other classification algorithm to become more accurate.

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