



Rainfall and Humidity Prediction

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Abstract— Rainfall becomes a significant factor in agricultural countries like India. There are mainly two approaches to predict rainfall : Empirical method and dynamical method. the empirical approach is based on analysis of historical data of the rainfall and Its relationship to a atmosphere variety of variables over different parts of the world.

Floods are among the most destructive natural disasters which are highly complex to model. There search on the advancement of flood prediction models contributed to risk reduction policy suggestion minimization of the loss of human life and reduction the property damage associated with floods To mimic the complex . mathematical expressions of physical processes of floods during the past two decades neural network methods contributed highly in the advancement of prediction. systems providing better performance and cost-effective solutions To prevent this problem to predict flood happen or not by rainfall datasets with investigate the SMLT based technique.

INTRODUCTION:

Data science is an interdisciplinary field that uses scientific styles, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data, and apply knowledge from data across a broad range of operation disciplines.

Data science is a study that combines domain expertise, programming skills, and knowledge of mathematics and statistics to prize meaningful insights from data.

Specific operations of AI include expert systems, natural language processing, speech recognition and machine vision.

Machine learning focuses on the development of Computer Programs that can change when exposed to new data which is being explicitly programmed. Prediction and process to test and train datasets involve specialized algorithms. It feeds the training data to an algorithm, and the algorithm uses this training data to give predictions on a new test data. Supervised Machine Learning is the majority of practical machine learning uses supervised learning. Supervised learning is

where have input variables (X) and an output variable (y) and use an algorithm to learn the mapping function from the input to the output is $y = f(X)$. The goal is to find the output function so well that when you have new input data (X) that you can predict the output variables (y) for that data. Supervised ML algorithms include logistic regression, multi-class classification, Decision Trees and support vector machines etc. It requires that the data used to train the algorithm is already labeled with correct answers. Supervised ML problems has goal to construct a brief model that can predict the values of the dependent attribute from the attribute variables.

LITERATURE SURVEY:

Title A Hybrid Machine Learning Approach for Classifying Upstanding Images of Flood- Hit Areas
Author Akshya, J.P.L.K.Priyadarsini
Time 2019

The bracket is done on an image datasets which consists of two groups one is upstanding images with flood tide- affected areas and other is upstanding images without any swamped affected areas. The downloaded datasets is aimlessly partitioned also the bracket of image is done. This bracket involves hybridization of SVM classifier along with k- means clustering. The SVM classifier is used to train colorful orders of the datasets. relative studies show that SVM classifier is one of the preferable classifiers among all the others that are extensively used in important remote seeing operation and provides a much better delicacy when compared to other algorithms like decision trees. It was also used for working multi-class bracket problems. It builds a hyperactive aeroplane

that separates both the orders and is used for grading new images. Classifier is estimated grounded on colorful parameters; some of them being delicacy, vaticination speed and training time. The confusion matrix is erected to represent the performance

of the classifier. This matrix represents the number of rightly and inaptly classified exemplifications from the datasets. The

performance of this methodology is estimated. It's able of classifying the swamped areas with good delicacy. This model classified 90 of swamped images rightly. A comparison is done with the delicacy of the model by training it with different surroundings and the results had been colluded. Kernel functions are also changed for the SVM classifier to plot the difference in the vaticination and training time.

Title Multiple Input Single Affair(MISO) ARX and ARMAX Model of Flood Prediction System Case Study Pahang

Author Fazlina Ahmat Ruslan, Khadijah Haron, Abd Manan Samad, Ramli Adnan

Year 2017

It has proposed a designed of 7 hours flood tide vaticination models using MISO ARX and ARMAX structure and compared the vaticination performances. Results showed that ARMAX model has advanced Stylish Fit chance value and lower rmse value. This means ARMAX model has better vaticination performance. The models were designed using Matlab System Identification toolbox. The position for the case of study was at Pahang River, Temerloh, Pahang with four upstream stations and one downstream station or observed position. The data used were attained from the Malaysian Department of Drainage and Irrigation. Simulation results showed that the vaticination performance of flood tide vaticination model designed by ARMAX structure showed better Stylish Fit value and lower rmse values as compared to the model designed using ARX structure.

Title cataracts vaticination Using Radial Base Function(RBF) Grounded on Internet of effects(IOT)

Author Ni Komang Ega Kartika, Muhammad Ary Murti, Casi Setianingsih

Year 2019

Artificial Neural Networks had been trained on the data that are in the form of water position data and downfall data which is used to prognosticate the water position and diurnal downfall for the coming month. The parameters used to get the lowest error rate in the vaticination process of water position and downfall with the stylish radial base function neural network is touse. Here flood tide vaticination is done by Radial Base Function. The data was entered from Citarum River Hall. The result of Radial Base Function Neural Network is transferred to an android operation which shows the probability of flood tide circumstance.

EXISTING SYSTEM:

An interactive neural network predicted type model for better prediction of rainfall has been put forth in this paper; we have proposed an interactive model for predicting rainfall using neural classification. The model is designed in such a way, that it fetches feature extraction from a database including information about previous rainfalls in a specific area. The features were also pre-processed and then further segmented using the random forest. The corrected outputs are then classified using neural networks. A comparison of spatial interpolation scheme is done with being systems by deploying the hybrid classifier. The efficiency of the proposed model is calculated and is analyzed with the traditional Deep Learning process and it is observed that the Random forest grounded interactive model provides better performance.

DISADVANTAGES OF EXISTING SYSTEM:

1. They did not mentions any accuracy
2. It can't thereby better determine the regularity of rainfall data and achieve more accurate prediction results of flash flood.

PROPOSED SYSTEM:

The significance of advanced systems for short-term and long-term prophecy systems are very much important for flood and other heavy rainfall prediction. However, the prediction of flood and circumstance location is fundamentally complex due to the dynamic nature of climate condition. Almost all ANN models for predicting flood are frequently trained with a BPNN. While BPNNs are extensively used today, the MLP an advanced representation of ANNs lately gained popularity. The MLP is a class of FFNN which utilizes the supervised learning of BP for training the network of interconnected nodes of several layers. Characteristics of MLP are simplicity, nonlinear activation, and a high number of layers. Due to these characteristics, the model was extensively used in predicting flood and other complex rainfall prediction models. In a model of ANN classes used in flood modeling, MLP models were reported to be more efficient with better conception capability. Nonetheless, the MLP is generally set up to be more delicate to optimize.

Advantages of the proposed system :

1. These reports are to the exploration of connection of machine learning techniques for prediction of Flood using Rainfall datasets.
2. Eventually, it highlights some observations on future research issues, challenges, and needs.
3. ML is a field of artificial intelligence (AI) used to induce regularities and patterns, furnishing easier implementation with low computation cost, as well as fast training, validation, testing, and evaluation, with high performance compared to physical models, and relatively less complexity.
4. The output is deployed with exact delicacy using flask.

METHODOLOGY:

Data Cleaning

In this section of the report will load in the data, check for cleanliness, and also trim and clean given datasets analysis. Make sure that the document way precisely and justify.

Data Collection

The data set collected for predicting given data is to resolve into Training set and Test datasets. Generally, 73 rates are applied to resolve the Training set and Test set. The Data Model which was created using Random Forest, logistic, Decision tree algorithms and Support vector classifier(SVC) are applied on the Training set and predicated on the test affect delicacy, Test set vaticination is done.

Pre-processing

The missing values in the collected data may lead to inconsistency. To gain better results, data need to be preprocessed so as to ameliorate the effectiveness of the algorithm. The outliers have to be removed and also variable conversion is to be done.

The vaticination of Flood, a Random Forest Algorithm vaticination model is effective because of the following reasons It provides better results in bracket problem.

It's strong in preprocessing outliers, inapplicable variables, and a blend of nonstop, categorical and separate variables. It produces out of bag estimate error which has proven to be unbiased in many tests and it is relatively easy to tune with.

OUTPUT:

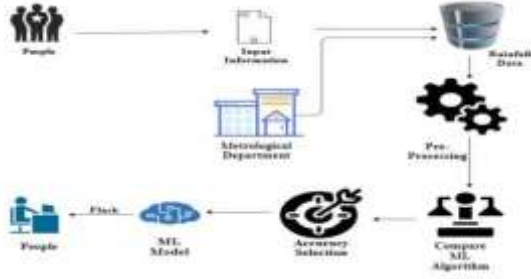


Fig. 1. System Architecture

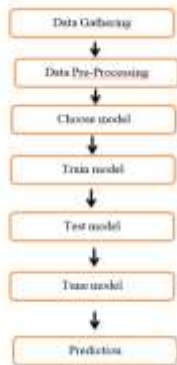
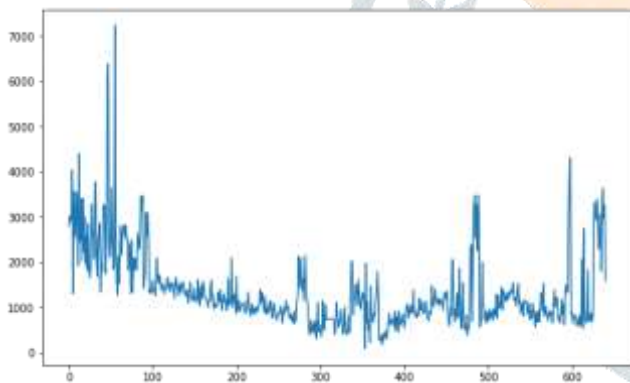


Fig. 2. Flow Graph

Fig. 3. Graphical Representation



CONCLUSION:

The logical process started from data drawing and recycling, value, exploratory analysis and eventually model structure and evaluation. Eventually, we prognosticated the flood tide using machine literacy algorithm with different results with Rainfall Datasets. This study shows that for periodic downfall prophecy model showed better performance.

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