

Rainfall Pattern Analysis and Prediction

(Team_ID:- 09)

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TEAMWORK DIVISION

VEDANT GOYAL & DHRUV SHAH

Data Cleaning

- Filling Missing Values by Subdivision Means

Data Preprocessing

- Standardization
- Aggregation (by decades)
- Discretization with equal frequency
- Region wise Preprocessing

Data Visualization before Processing -

- Box Plot
- Line Plot
- Pie Chart
- Bar Graph

Data Processing -

- Next Year Rainfall Prediction using Linear Regression
- Predicting Fluctuations in rainfall over the last 100 years.
- Implemented DBSCAN (Density Based Clustering) to find Flood and Drought Prone Areas.
- Monsoon Season Rainfall Prediction
- Crop Shortage Prediction

Data Visualization after Processing -

- Clustering Bar Plot (Flood, Drought Areas)
- Predicted Rainfall Line Plot
- Fluctuations Plot

Report Preparation

Vaibhav Yadav & Ashish Gupta

Data Preprocessing :

- Filling missing value with median
- Stratified Sampling with replacement
- Min-Max normalization
- State wise aggregation of dataset
- Noise Reduction
- Discretization with equal interval

Data Visualization for exploratory data analysis:

- Cartographic projection of rainfall distribution.
- Line Chart
- Histogram and Bar Graph

Data Processing :

- Temporal Clustering using k-means
- Outlier analysis based on temporal-distance
- Spatio-temporal Clustering
- Outlier analysis based on spatio-temporal distance
- Finding correlation between all states.

- Discretization with equal interval

Data Visualization on processed data:

- GIF showing change in rainfall over 100 years
- Cartographic projection of temporal clustering on map of India
- Cartographic projection of spatio-temporal clustering on map of India

Report Preparation

Team Achievements :-

- How to work as a team was learned while doing this project
- We were able to learn many new tools in python
- We were able to learn how to collaborate on work from home environment
- Time management was learned from this project
- Scrum methodology was followed to work on this project which was an awesome experience.
- We were able to learn and apply many things that were taught in the class as well as not taught in the class.

