PAN INDIAN MODEL TO PREDICT RAINFALL

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PROBLEM STATEMENT

- Accurate rainfall prediction is critical for various sectors, including agriculture, water management, and disaster preparedness. Traditional meteorological approaches used by IMD often rely on statistical models, which, while effective, can be limited in their ability to capture complex patterns in data, especially in non-linear time series.

DATA OVERVIEW

- AGROMET data is used from 38 location in india that provides:

  RAINFALL
  SUNSHINE HOURS
  MAX/MIN TEMP
  WINDSPEED MEASUREMENT (1,2,3,4)
  RELATIVE HUMIDITY (1,2)

DATA OVERVIEW

- CORRELATIONS (THE CURRENT IMD model has similar CC)

- MTMP (Mean Temperature): 0.45
- WSM1 (Wind Speed Measurement 1): 0.38
- WSM2 (Wind Speed Measurement 2): 0.33
- WSM3 (Wind Speed Measurement 3): 0.31
- WSM4 (Wind Speed Measurement 4): 0.27

INITIAL MODEL

Categorical model that takes previous rf data using LSTM

Accuracy : .982

But the same result is not seen when the amount of rainfall is being predicted.
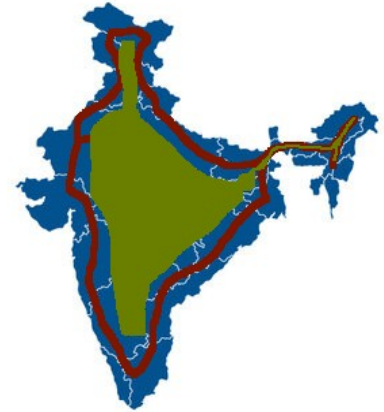
MEAN PERCENTAGE ERROR > 250 %
For comparison imd stastical model has less than 8% error.

CHALLENGES

- DATA VARIETY

- CORRELATION COEFFICIENT

- NO CONNECTION BETWEEN STATIONS

- OUTSIDE INFLUENCE

SOLUTIONS

- DIVIDING STATION INTO OUTER AND INNER

- OUTER : RAINFALL, TEMP, WINDSPEED

- INNER : RAINFALL

- New variable that clusters using geo location.

SOLUTIONS

PROCEDURE TO PROCURE RAINFALL DATA OF OVER 150 STATIONS IN CURRENT PIPELINE.

CURRENTLY RESEARCHING THE OUTSIDE INFLUENCE WHICH SHOULD BE TAKEN IN ACCOUNT.

ANY QUESTIONS