Bengaluru Rainfall Prediction

The rainfall prediction project is a data-driven initiative that aims to forecast the amount of rainfall that can be expected in a given area. The data for this project was collected from Open Meteo, which provides a wealth of meteorological information from around the world.

To analyse the data and develop a prediction model, I used a heatmap to identify any instances of multicollinearity, which can occur when two or more variables in a dataset are highly correlated with each other. By identifying these instances, I was able to remove any redundant variables and ensure that the final model was as accurate and efficient as possible.

To evaluate the performance of the model, I used the R2 performance metric, which measures the proportion of variance in the dependent variable (rainfall, in this case) that can be explained by the independent variables (such as temperature, humidity, wind speed, etc.)

I developed two models - a linear regression model and a gradient boost regressor. The linear regression model achieved an R2 score of 0.85, indicating that it could explain 85% of the variance in the rainfall data. However, the gradient boost regressor outperformed the linear regression model, achieving an R2 score of 0.95, which suggests that it could explain 95% of the variance in the rainfall data.

Overall, the project successfully developed a prediction model that can forecast rainfall with a high degree of accuracy. The results suggest that the gradient boost regressor is the most effective model for this particular dataset, and could potentially be used to inform planning and decision-making in a range of industries, such as agriculture, disaster management, and urban planning.

The Dataset contains the following columns.

- time
- weathercode
- temperature_2m_mean (°C)
- apparent_temperature_mean (°C)
- shortwave_radiation_sum (MJ/m²)
- precipitation_sum (mm)
- rain_sum (mm)
- precipitation_hours (h)
- windspeed_10m_max (km/h)
- windgusts_10m_max (km/h)

- winddirection_10m_dominant (°)
- et0_fao_evapotranspiration (mm)