

SYNOPSIS

1. Exploring the DataSets

- Power_Actual
- Weather_Actual
- Weather_Forecast

2. Power_Actual Features

- **Datetime** : 1st oct 2017 - 30th sept 2019
- **GHI** : Global Horizontal Irradiance means SunLight falling on Horizontal Solar Panels
- **GTI** : Global Tilt Irradiance means SunLight falling on Tilted Solar Panels
- **Power** : Power of every 15 mins in Kilowatts
- In the Power_Actual dataset observed that Power Feature was having some data points in watts. so, converted into kilowatts with the help of Excel.
- Converted Date and time into daily data("one record for each day") with Groupby function.
- Removed GHI and GTI from the dataset because there was no data in the Dataset.

3. Weather_Actual Features

- **Plant id** : 1
- **Date_time UTC** : universal Time Coordination Date Time every 1 hour
- **Date_time Local** : local Date Time every 1 hour
- **Cloud Cover** : measured in okta 0 - clear sky / 1,2 - few clouds ,etc..
- **Apparent temperature** : Caused by combined effects of air temp,humidity and wind speed
- **Temperature** : temperature celcius
- **Humidity** : 0/1
- **Dew point** : The atmospheric temp below which water droplets begin to condense and dew can form.
- **Wind Bearings** : wind direction
- **Wind Speed** : Km/h
- **Wing Gust** : Sudden bust in wind speed (m/s)
- **Heat Index** : Heat index

- **Pressure** : Atmospheric Pressure is the pressure within the atmosphere of the earth (hpa)
 - **Qtf** : -
 - **UV_Index** : Sun born 1,2(Low) ; 3,4,5(moderate) ; 7,8(high) ; 8,9,10(very high)
 - **Snow** : snow
 - **POP** : -
 - **Fctcode** : -
 - **Ozone** : ozone
 - **Precip Accumulated** : rainfall
 - **Precip intensity** : rainfall intensity
 - **Precip Probability** : rainfall Probability
 - **Precip type** : Rain/no rain
 - **Visibility** : Visibility range
 - **SunRise** : sunrise time
 - **SunSet** : sunset time
 - **Icon** : clear night ,fog,clear day
 - **Summary** :clear night ,fog,clear day
 - **Updated Time** : Updated time
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- In the Weather_Actual dataset found that there was “-9999” everywhere in the dataset . so, with the help of excel, replaced it with “nan” values.
 - Converted Date and time into daily data(“one record for each day”) with Groupby function.
 - Removed unwanted Features.
 - Found all null values and filled with mean values.

4. EDA

- Shape
- Describe
- Info
- Histogram
- Pair Plot

5. Feature Selection

- Correlation
- ExtraTree Regressor

6. PreProcessing

- Normalization

7. Hyper Parameter Tuning

- GridSearchCV

8. Model Building

- Linear Regression
- Random Forest
- SVM
- SARIMA
- Neural Networks