

MEASURE ENERGY CONSUMPTION

Explanation of complete steps involved in making model for **MEASURE ENERGY CONSUMPTION** using Artificial Intelligence and Machine Learning

Importing Libraries:

matplotlib.pyplot for plotting.

numpy for numerical operations.

os for accessing the directory structure.

pandas for data processing and reading Parquet files.

seaborn for statistical data visualization.

Setting Plot Style:

plt.style.use('ggplot') is used to set the style of the plots to 'ggplot', which is a popular style known for its clean and informative look.

Loading Data:

`df = pd.read_parquet('../input/est_hourly.parquet')` reads a Parquet file named 'est_hourly.parquet' and stores it in a DataFrame named `df`.

Displaying an Image:

`Image(url="http://slideplayer.com/4238181/14/images/4/PJM+Evolution.jpg")` is using IPython to display an image from a URL. This image likely shows the evolution of PJM regions.

Displaying the First Few Rows of Data:

`df.head()` prints out the first few rows of the DataFrame `df`.

Descriptive Statistics:

`df.describe()` provides summary statistics (like mean, min, max, etc.) for each column in the DataFrame.

Histograms:

`df['PJME'].plot.hist(...)` plots a histogram of the 'PJME' column.

`df['DOM'].plot.hist(...)` does the same for the 'DOMINION Load'.

`df.plot.hist(...)` plots histograms for all columns in the DataFrame.

Time Series Plots:

`df.plot(...)` creates a time series plot of all columns in the DataFrame.

`df[['PJM_Load','PJME','PJM_W']].plot(...)` does the same for specific columns.

Zoomed Time Series Plots:

`df['PJME'].loc[...]` selects a specific time range using boolean indexing and then plots it.

Feature Engineering:

Several new columns are added to the DataFrame using datetime properties like day of the week, day of the year, year, month, quarter, hour, etc.

Scatter Plot:

`df[['PJM_Load','hour']].plot(..., kind='scatter', ...)` creates a scatter plot of 'PJM_Load' against 'hour'

Pivot Table and Line Plot:

`df.pivot_table(...).plot(...)` creates a line plot of aggregated values from a pivot table.

Box Plots:

Several box plots are created using `sns.boxplot()` to visualize the distribution of 'PJME' values across different hours and quarters.

Setting Plot Limits:

`ax.set_ylim(0,65000)` is used to set the y-axis limits for the box plots.