ELECTRICITY PRICE PREDICTION

**Problem Statement:**

Create a predictive model that utilizes historical electricity prices and relevant factors to forecast future electricity prices, assisting energy providers and consumers in making informed decisions regarding consumption and investment

**Problem Definition:**

The problem is to develop a predictive model that uses historical electricity prices and relevant factors to forecast future electricity prices.

The objective is to create a tool that assists both energy providers and consumers in making informed decisions regarding consumption and investment by predicting future electricity prices.

This project involves data preprocessing, feature engineering, model selection, training, and evaluation.

**Design Thinking:**

Data Source: Utilize a dataset containing historical electricity prices and relevant factors like date, demand, supply, weather conditions, and economic indicators.

Data Preprocessing: Clean and preprocess the data, handle missing values, and convert categorical features into numerical representations.

Feature Engineering: Create additional features that could enhance the predictive power of the model, such as time-based features and lagged variables.

Model Selection: Choose suitable time series forecasting algorithms (e.g., ARIMA, LSTM) for predicting future electricity prices.

Model Training: Train the selected model using the preprocessed data.

Evaluation: Evaluate the model's performance using appropriate time series forecasting metrics (e.g., Mean Absolute Error, Root Mean Squared Error).

**INTRODUCTION:**

The price of electricity depends on many factors. Predicting the price of electricity helps many businesses understand how much electricity they have to pay each year.

The Electricity Price Prediction task is based on a case study where you need to predict the daily price of electricity based on the daily consumption of heavy machinery used by businesses. So if you want to learn how to predict the price of electricity, then this article is for you.

In this article, I will walk you through the task of electricity price prediction with machine learning using [**Python**](https://thecleverprogrammer.com/2021/06/19/fundamentals-of-python/).

**PROGRAM:**

import pandas as pd

import numpy as np

data = pd.read\_csv("/content/Electricity.csv")

print(data.head())

**Electricity Price Prediction:**

Suppose that your business relies on computing services where the power consumed by your machines varies throughout the day. You do not know the actual cost of the electricity consumed by the machines throughout the day, but the organization has provided you with historical data of the price of the electricity consumed by the machines. Below is the information of the [**data**](https://raw.githubusercontent.com/amankharwal/Website-data/master/electricity.csv) we have for the task of forecasting electricity prices

**DATAS:**

1. DateTime: Date and time of the record
2. Holiday: contains the name of the holiday if the day is a national holiday
3. HolidayFlag: contains 1 if it’s a bank holiday
4. otherwise 0
5. DayOfWeek: contains values between 0-6 where 0 is Monday
6. WeekOfYear: week of the year
7. Day: Day of the date
8. Month: Month of the date
9. Year: Year of the date
10. PeriodOfDay: half-hour period of the day
11. ForcastWindProduction: forecasted wind production
12. SystemLoadEA forecasted national load
13. SMPEA: forecasted price
14. ORKTemperature: actual temperature measured
15. ORKWindspeed: actual windspeed measured
16. CO2Intensity: actual C02 intensity for the electricity produced
17. ActualWindProduction: actual wind energy production
18. SystemLoadEP2: actual national system load
19. SMPEP2: the actual price of the electricity consumed (labels or values to be predicted)

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