ELECTRICITY PRICE PREDICTION

TEAM MEMBER

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PROJECT:ELECTRICITY PRICE PREDICTION

Introduction

- ✓ **Electricity price prediction** is a crucial aspect of the energy industry and financial markets, playing a pivotal role in decision-making for both consumers and producers of electricity.It involves forecasting the future cost of electricity, typically in the form of per-unit prices, with the aim of providing valuable insights for various stakeholders. These predictions are essential for optimizing energy consumption, managing costs, and ensuring the reliability of power supply in an increasingly complex and dynamic energy landscape.

- ✓ The electricity market is influenced by a multitude of factors, including supply and demand dynamics, weather conditions, fuel prices, government policies, and the integration of renewable energy sources. Consequently, accurate price prediction becomes a challenging task that requires advanced modeling techniques and data analysis.

- ✓ Advancements in machine learning, artificial intelligence, and data analytics have revolutionized electricity price prediction.

- ✓ These technologies allow us to harness vast amounts of historical data, real-time information, and various external variables to create models capable of forecasting electricity prices with increasing accuracy. These predictions are not only valuable for energy producers, traders, and grid operators but also for consumers who can adjust their consumption patterns to save money and reduce their environmental impact.

- ✓ In this context, electricity price prediction is not just about anticipating cost fluctuations; it's about empowering businesses, policymakers, and individuals to make informed decisions that impact both their financial bottom line and the sustainability of our energy systems. This introduction sets the stage for exploring the methods, challenges, and applications of electricity price prediction in more detail.

Content for Project Phase 2

Consider exploring advanced regression techniques like Gradient Boosting or XGBoost for improved Prediction accuracy

Data Source

A good data source for Electricity price prediction using machine learning should be

Accurate, Complete, Covering the geographic area of interest, Accessible.

	generation biomass	generation fossil brown coal/lignite	generation fossil gas	generation fossil hard coal	generation fossil oil	generation hydro pumped storage consumption	generation hydro run-of-river and poundage	generation hydro water reservoir	generation nuclear	generation other	generation other renewable	generation solar	generation waste	generation wind onshore	total load actual	price day ahead	price actual
count	35045.00	35046.00	35046.00	35046.00	35045.00	35045.00	35045.00	35046.00	35047.00	35046.00	35046.00	35046.00	35046.00	35045.00	35046.00	35028.00	35064.00
mean	383.51	448.06	5622.74	4256.07	298.32	475.58	972.12	2605.11	6263.91	60.23	85.64	1432.67	269.45	5464.48	28696.94		49.87
std	85.35	354.57	2201.83	1961.60	52.52	792.41	400.78	1835.20	839.67	20.24	14.08	1680.12	50.20	3213.69	4574.99		14.62
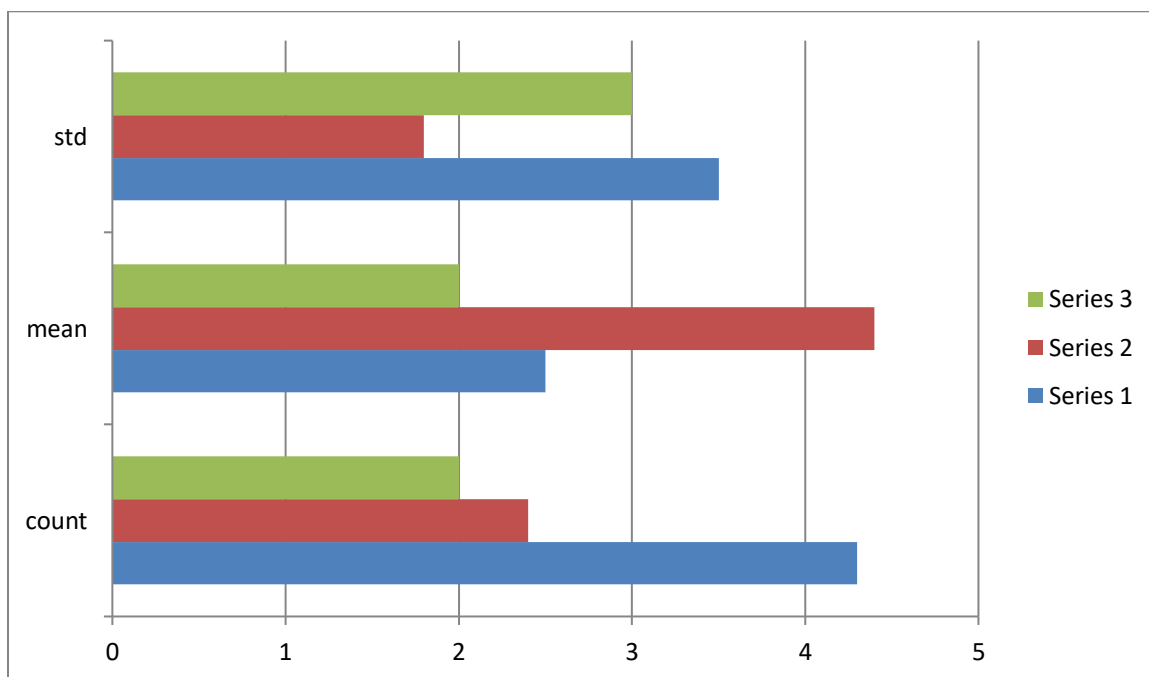
Data Collection and Preprocessing

✓ Importing the dataset: Obtain a comprehensive dataset containing relevant features such as Historical electricity prices, Demand data, Weather data etc.
✓ Data reprocessing: Clean the data by handling missing values, outliers, and categorical variables. Standardize or normalize numerical features

Exploratory Data Analysis (EDA)

✓ **Visualize and analyze the dataset to gain insights into the relationships between**
✓ **variables.**
✓ **Identify correlations and patterns that can inform feature selection and engineering**
✓ **Present various data visualizations to gain insights into the dataset.**
✓ **Explore correlations between features and the target variable (house prices).**
✓ **Discuss any significant findings from the EDA phase that inform feature selection.**

Conclusion

✓ Electricity price prediction is a challenging task, but it is important for a variety of stakeholders, including consumers, businesses, electricity generators and retailers, and policy makers.
✓ Machine learning models can be used to predict electricity prices with a high degree of accuracy, but the accuracy of the predictions will vary depending on the model used and the quality of the data