APPLIED DATA SCIENCE

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Product Demand Prediction with Machine Learnings

ABSTRACTION:

1. Data Collection: Collect historical sales data and external factors that influence demand, such as marketing campaigns, holidays, economic indicators, etc.
2. Data Preprocessing: Clean and preprocess the data, handle missing values, and convert categorical features into numerical representations
3. Feature Engineering: Create additional features that capture seasonal patterns, trends, and external influences on product demand.
4. Model Selection: Choose suitable regression algorithms (e.g., Linear Regression, Random Forest, XGBoost) for demand forecasting.
5. Model Training: Train the selected model using the preprocessed data.
6. Evaluation: Evaluate the model's performance using appropriate regression metrics (e.g., Mean Absolute Error, Root Mean Squared Error).

Data Collection

a. Historical Sales Data:

- Extract sales data from your internal sources. Ensure that it is clean, accurate, and well-documented.
- Consider using data visualization tools or software to create charts and graphs to better understand sales trends over time.

b. External Factors Data:

- For marketing campaigns, collect data on the timing, content, and channels used for each campaign.
- For holidays, create a calendar of relevant holidays and special events that could affect sales.
- For economic indicators, access data from government sources or reputable financial data providers.

Data Preprocessing

- Describe the significance of data cleaning and preparation.
- Highlight the tasks like handling missing values and converting categorical features into numerical ones.

Feature Engineering

- Explain the role of creating additional features to capture patterns.
- Emphasize capturing seasonal trends, overall trends, and external influences.

Model Selection

- Discuss the importance of choosing the right forecasting model.
- List suitable regression algorithms (e.g., Linear Regression, Random Forest, XGBoost).

Model Training

- Explain the process of training the chosen forecasting model.
- Mention that it uses the preprocessed data.

Evaluation Metrics

- Introduce evaluation metrics to assess model performance.
- Explain Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE).

Model Performance

- Display model evaluation results visually.
- Discuss how these results reflect the model's accuracy in predicting demand.

Conclusion:

- Summarize the key steps in the demand forecasting workflow.
- Highlight the importance of accurate forecasting for decision-making.

THANKING YOU