A.PRASATH
112721203303

EDA on mobile data

Introduction

- Title: Exploring Mobile Usage Patterns: An EDA
- Brief Overview: Understanding mobile usage patterns through Exploratory Data Analysis (EDA).
- Objectives: Unveil insights, trends, and correlations within the dataset.

Dataset Overview

- Dataset Description: Summary of mobile usage data.
- Source: Where the data originated.
- Variables: Key variables like call duration, data usage, messaging frequency.

Data Preprocessing

-Cleaning Process: Handling missing values, outliers, and inconsistencies.
- Data Formatting: Ensuring data is ready for analysis.

Descriptive Statistics

- Summary Statistics: Mean, median, standard deviation of key variables.
- Distribution Plots: Histograms and density plots showcasing variable distributions.

Univariate Analysis

- Variable Analysis: Individual exploration of call duration, data usage, messaging frequency.
- Visualizations: Histograms, box plots revealing patterns and outliers.

Bivariate Analysis

- Correlation Analysis: Matrix showing relationships between variables.
- Scatter Plots: Visualization of correlations between variables.

Time Series Analysis

- Trend Analysis: Examining mobile usage trends over time.
- Seasonal Patterns: Identifying monthly or weekly usage fluctuations.

Segmentation

- Clustering Analysis: Segmenting users based on usage behavior.
- User Profiles: Description of different user segments.

Visualization

- Visual Representations: Graphical depiction of key findings.
- Interpretation: Extracting insights from visualizations.

Insights and Recommendations

- Key Insights: Discoveries from the analysis.
- Recommendations: Actions for mobile service providers or marketers.
- Further Analysis: Suggestions for additional investigation.

Problem Statement

Perform an Exploratory Data Analysis (EDA) on a dataset containing mobile usage data to derive insights and understand patterns, trends, and relationships within the data.

Key Objectives

1. Understand the structure and content of the mobile usage dataset.
2. Identify any missing values, outliers, or inconsistencies in the data.
3. Explore the distribution of variables such as call duration, data usage, and messaging frequency.
4. Analyze patterns in mobile usage over time (e.g., daily, weekly, monthly).

5. Investigate correlations between different variables (e.g., call duration and data usage).
6. Segment users based on their mobile usage behavior.
7. Visualize findings using appropriate graphs and charts to communicate insights effectively.

Approach

1. Data Preprocessing: Clean the dataset by handling missing values, outliers, and inconsistencies.
2. Descriptive Statistics: Calculate summary statistics to understand the central tendency, dispersion, and distribution of variables.
3. Univariate Analysis: Explore individual variables to understand their distributions and identify any patterns or anomalies.
4. Bivariate Analysis: Examine relationships between pairs of variables to uncover correlations or dependencies.

5. Time Series Analysis: Investigate trends and seasonal patterns in mobile usage over time.
6. Segmentation: Use clustering techniques to segment users based on their mobile usage behavior.
7. Visualization: Create visualizations such as histograms, box plots, scatter plots, and time series plots to illustrate key findings.

Expected Output

Insights into mobile usage patterns, trends, and correlations within the dataset. Visualizations and summary statistics to support these insights, along with recommendations for further analysis or actions based on the findings.

Conclusion

- Summary: Recap of findings and their significance.
- Decision Impact: Importance of understanding mobile usage for decision-making.
- Future Directions: Opportunities for future research or analysis.