Data Science Internship – Visualization Library Documentation

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ShadowFox Internship (Beginner Level)

1. Library Overview

Matplotlib

Matplotlib is a popular Python library for creating static, animated, and interactive visualizations. It gives full control over every element of a figure and works well with NumPy and Pandas.

Seaborn

Seaborn is built on top of Matplotlib and simplifies the creation of beautiful statistical graphics. It integrates smoothly with Pandas and provides advanced visualization functions.

2. Graph Types

A. Matplotlib

Graph Type	Description
Line Plot	Used to show trends over time or sequence.
Bar Chart	Displays categorical data using rectangular bars.
Histogram	Shows the distribution of a dataset.
Pie Chart	Displays proportions of different categories.

B. Seaborn

Graph Type	Description
Line Plot	Plots relationships between two variables with a smooth line.
Bar Plot	Represents mean values with confidence intervals.
Histogram (Displot)	Shows distribution of data with optional KDE.
Heatmap	Displays data in matrix form with color-coded values.

3. Comparison

Feature	Matplotlib	Seaborn
Ease of Use	Requires more code and customization.	Simpler syntax built-in styling.
Customisation	Highly customizable and flexible.	Limited but aesthetically appealing
Interactivity	Mostly static plots	Static plots with some interactivity options.
Performance	Very fast for basic visualizations.	Slightly slower due to abstraction.

4. Reflection – What I Learned

Through this internship task, I learned how to visualize data using Matplotlib and Seaborn. I understood how different types of plots can convey information effectively. Matplotlib taught me the importance of customization and flexibility, while Seaborn showed me how data can be presented beautifully with minimal code. This task helped me build confidence in Python-based data visualization and strengthened my foundational skills in Data Science.

5. Resources

- Matplotlib: https://matplotlib.org/stable/users/explain/quick_start.html
- Seaborn: https://seaborn.pydata.org/tutorial/introduction.html