

Module 5: Visualizing Data with AI Templates

Mastering Professional Charting with Matplotlib & Seaborn

Visualization Engines

The Powerhouse Packages of the Python
Ecosystem

Matplotlib: The Standard

Ultimate Versatility

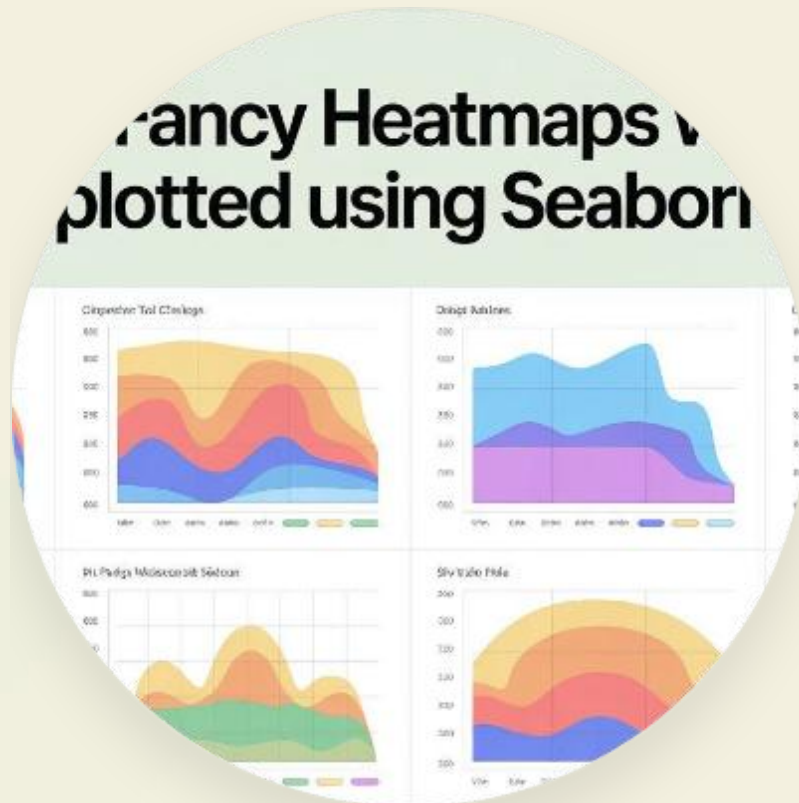
Matplotlib is the foundational library for static, animated, and interactive visualizations. It offers granular control over every element.

Key Strengths:

- Pixel-perfect customizability.
- Publication-quality outputs.
- Integration with Jupyter & GUI apps.



Seaborn: Statistical Beauty



High-Level Abstraction

Built on top of Matplotlib, Seaborn simplifies complex statistical graphics with a concise API and beautiful defaults.

Key Strengths:

- Themes for aesthetic consistency.
- Advanced statistical mapping.
- Works natively with Pandas.



No-Syntax Charting

Generating Flawless Code through Natural
Language

Describing Your Vision



Ideate

Define the goal. Example: "I want to see the distribution of bills by day and smoker status."



Prompt

Describe to AI: "Generate Seaborn code for a boxplot of total_bill by day, colored by time."



Execute

Copy the code into Jupyter. AI handles the import, plot, and style logic.

Hands-on with Online Data

Live Dataset Ingestion

Import the public **Tips** dataset directly from GitHub to visualize real-world patterns in Jupyter.

```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

url = "https://raw.githubusercontent.com/mwaskom/seaborn-data/master/tips.csv"
tips = pd.read_csv(url)

# Described Prompt Result:
sns.barplot(x="day", y="total_bill", data=tips)
plt.show()
```





Chart Customization

Elevating Visuals from Good to
Professional

The Professional Checklist

-  **Action Titles:** Move beyond labels; describe the key insight in the title.
-  **Readable Axes:** Ensure labels use standard units and readable font sizes.
-  **Brand-Appropriate Colors:** Use consistent palettes to highlight key data points.
-  **Clean Legends:** Remove redundant information and place legends strategically.

Why Visuals Matter

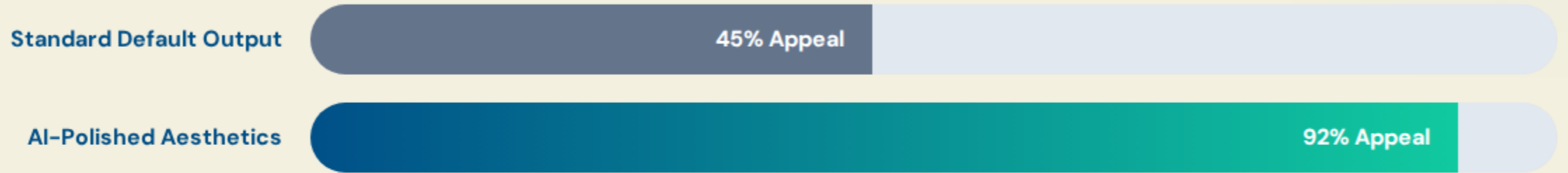
85%

Visual Recall Advantage

Process Information Faster

Human brains process visual information 60,000 times faster than text. Polished customization ensures that your business conclusions are unmistakable and persuasive.

Default vs. Polished Impact



Customizing colors, titles, and fonts leads to a 2x increase in stakeholder engagement and comprehension.

Questions?

Next Steps: Generating your first AI viz template.

www.training-portal.com | support@analytics.io

Image Sources



<https://towardsdatascience.com/wp-content/uploads/2024/12/1b1LDteFrK29Fj3Tkd2R2lw.png>

Source: towardsdatascience.com



https://miro.medium.com/1*A-Fw6tCjL9Z_T5NOi8ym1A.jpeg

Source: [medium.com](https://miro.medium.com)



<https://code.visualstudio.com/assets/docs/datascience/jupyter/intellisense.png>

Source: code.visualstudio.com