DataWiz: An AI-Powered Data Visualization & Learning Tool

Overview

DataWiz is an **AI-driven, interactive data visualization platform** that bridges the gap between **learning** and **analysis**.
It enables users - from students to analysts - to **upload, visualize, and understand** their datasets effortlessly while offering **real-time AI guidance, explanations, and chart recommendations**.

Key Features

1. **Automated Chart Generation**

   - Supports **107+ chart types** from bar, line, and pie to advanced visuals like radar, network, treemap, and Gantt.

   - Built with a **modular registry system** using **Matplotlib** and **Plotly** for static and interactive rendering.

2. **Smart Recommendations & Explanations**

   - Automatically suggests the **best visualizations** based on the dataset.

   - Integrated **Groq LLaMA 3 LLM** provides simple, contextual explanations for each chart and dataset interpretation.

3. **Dynamic Themes & Color Customization**

   - Choose from **Seaborn**, **Plotly Dark**, **Minimal**, or **Custom** color palettes with real-time preview support.

   - Allows full personalization for presentations and reports.

4. **Learn While You Visualize**

   - Each visualization includes *"What it shows"* and *"When to use"* explanations.

- A built-in learning assistant explains core concepts like **correlation**, **variance**, and **standard deviation** in plain English.

5. **Privacy-First & Offline**

   - Runs locally with **Streamlit**, requiring **no login** or internet connection.

   - Lightweight (<200MB) and ideal for classrooms or offline environments.

How DataWiz Differs from Existing Tools

- Unlike Power BI, Tableau, or Excel, which primarily target professionals and require licenses or cloud integration, DataWiz is open, local, and learning-oriented.
- It is designed not only to visualize data but also to teach users the reasoning behind each visualization.
- While competitors focus on business analytics, DataWiz uniquely combines education, visualization, and explainable AI in one lightweight platform that runs without a login required.

Tech Stack

- **Frontend/UI:** Streamlit

- **Visualization:** Matplotlib, Plotly, Seaborn

- **Backend Logic:** Python (Pandas, NumPy)

- **AI/LLM:** Groq (LLaMA 3 API), Rule-based SLM

- **Environment Management:** dotenv, Pillow

- **File Handling:** CSV/XLSX via Pandas I/O

Future Scope - DataWiz Premium

DataWiz Premium will evolve into an **AI-assisted analytics environment** for professionals and managers.
Planned capabilities include:

- **Trend Analysis:** Fetch and compare user data with **latest industry trends**.

- **Comparative Insights:** Auto-analyze datasets against **averages, medians, or standard deviations**.

- **AI-Driven Reports:** Generate contextual analytical summaries using **Groq or Mixtral LLMs** to explain *why* and *what it means*.