

Data Visualizer – An Interactive Web Application for Data Analysis

The Data Visualizer is a lightweight web application built using Python and Streamlit that allows users to interactively explore and visualize CSV files. It is designed for beginners, educators, and analysts who want to perform quick Exploratory Data Analysis (EDA) without writing code.



1 Problem Statement

Many individuals, especially beginners and non-programmers, struggle to analyze and visualize structured data due to the complexity of traditional tools and the need for coding knowledge. There is a clear need for a simple, accessible solution that allows users to perform basic exploratory data analysis (EDA) on CSV files without writing code. This project addresses that gap by providing an interactive web application that enables users to select datasets, preview raw data, and generate meaningful visualizations effortlessly through an intuitive interface.

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2 Proposed Solution

To address the challenges faced by non-technical users in performing data analysis, we propose a user-friendly web application built with Streamlit that enables interactive exploration and visualization of CSV datasets. This solution allows users to select data files, preview their contents, and generate various plots—such as bar charts, scatter plots, histograms, and line graphs—through a clean and intuitive interface. By eliminating the need for coding and providing dynamic dropdowns for column selection, the application makes basic data analysis accessible, fast, and efficient for students, educators, and analysts alike.

Data Visualizer Web App

Explore, Analyze, and Visualize data like never before...

Select a File

Super-Market-Sales.csv

	Date	Time	Payment	cogs	gr
0	2019-01-05	13:08	Ewallet	522.83	
1	2019-03-08	10:29	Cash	76.4	
2	2019-03-03	13:23	Credit card	324.31	
3	2019-01-27	20:33	Ewallet	465.76	
4	2019-02-08	10:37	Ewallet	604.17	

Select the X-Axis

None

Select the Y-Axis

None

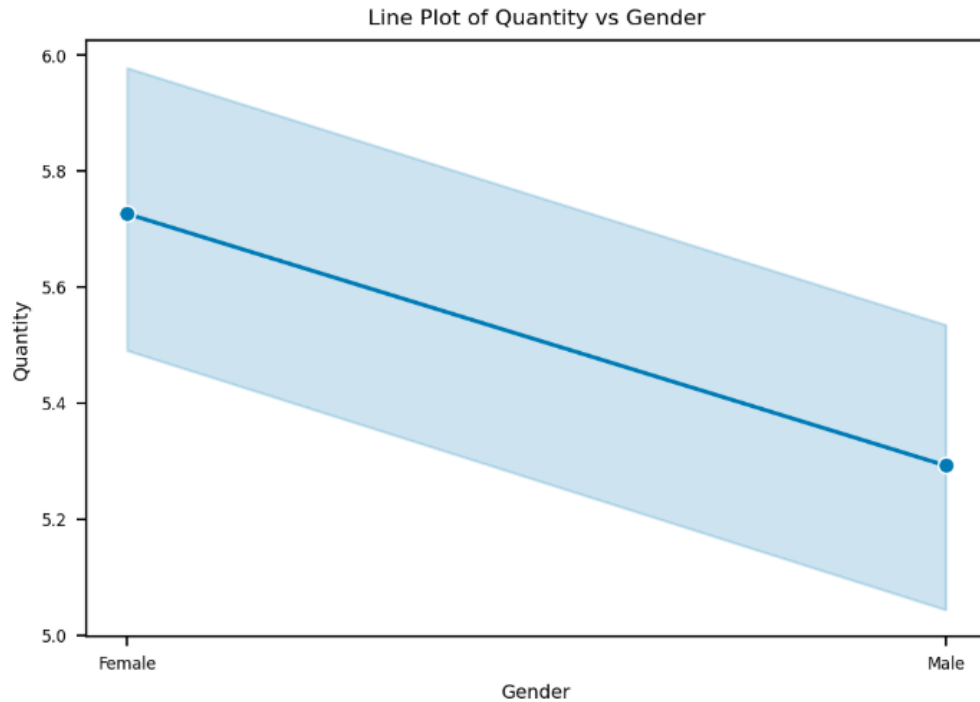
Select a Plot

None

Generate Plot

3 Methodology Used

- Enable users to load and analyze datasets directly from a web interface.
- Provides multiple plot types such as line, bar, scatter, histogram, and count plot.
- Allow dynamic selection of X and Y columns from the dataset.
- Facilitate quick data previews and visual exploration.



4 Key Features

- File selector to choose a dataset from the data/ folder.
- Preview of raw data using Pandas.
- Interactive plot generation with multiple chart options.
- Dynamic dropdowns to select columns for plotting.
- Error handling for incorrect or empty selections.

5 Tools & Technologies Used

- Python
- Streamlit
- Pandas
- Seaborn & Matplotlib

6 Files Structure

- `WebApp.py` – Main Streamlit application file
- `setup.sh` – Shell script to install dependencies during deployment
- `requirements.txt` – Python dependencies
- `Procfile` – Used for deployment on Heroku
- `data/` – Folder containing CSV files

7 How It Works

- User selects a file from available CSVs.
- The app loads and previews the dataset.
- User selects the plot type and the X and Y columns.
- Plot is generated and displayed using Seaborn or Matplotlib.

8 Deployment Options

Can be deployed on Heroku using `setup.sh` and `Procfile`. Alternatively, Streamlit Cloud using `WebApp.py` and `requirements.txt`

9 Live Application Link

<https://data-visualizer-webapp.streamlit.app/>