

My ChatterBox: Data Science & ML Chatbot

[Python Dash License](#)

Project Overview

My ChatterBox is a sleek, web-based chatbot built with **Python**, **Dash**, and **machine learning**. It answers questions about **Data Science**, **Machine Learning**, and related tools like Python, Pandas, SQL, and algorithms.

It uses **Multinomial Naive Bayes** with **TF-IDF vectorization** to map user queries to structured answers from a **custom knowledge base**.

🌟 **Key Idea:** Train the bot on a dataset of Q&A pairs to provide instant responses in a visually appealing chat interface.

Features

- 🐦 **Custom Knowledge Base** – Trainable dataset (`chatbot_dataset.csv`) with FAQs.
 - 🗨️ **NLP Backend** – Uses `nltk` for tokenization and `TfidfVectorizer` for feature extraction.
 - 🌙 **Dark Mode UI** – Modern, responsive interface built with Dash.
 - 🗨️ **Interactive Chat** – Real-time messages with styled chat bubbles.
 - ⚡ **Lightweight & Extendable** – Easily add new Q&A pairs to expand intelligence.
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UI Preview

Chat in Action

Chatbot GIF

Example of user asking a question and bot responding.

Dark Mode & Chat Styling

Dark Mode Screenshot

Clean UI with scrollable chat bubbles.

🌸 Tip: Replace the above placeholder image/GIF with your actual screenshots or GIFs.

Technology Stack

Component	Technology	Role
Backend/Core Logic	Python	ML model training and data preprocessing
Web Framework	Dash	Builds the interactive web interface
Machine Learning	scikit-learn	Multinomial Naive Bayes classifier
NLP Preprocessing	NLTK	Tokenization & text normalization
Data Storage	Pandas	Loads and manages the dataset

9 Setup & Installation

Prerequisites

- Python 3.7+ installed

1 Clone the Repository

```
git clone <repository_url>
cd my-chatterbox
```

2 Install Dependencies

```
pip install pandas scikit-learn dash nltk
```

3 Download NLTK Data

```
import nltk
nltk.download('punkt')
```

4 Project Structure

```
my-chatterbox/
├── dark_mode_chatbot.py    # Main application script
├── chatbot_dataset.csv     # Q&A dataset
├── README.md              # Project documentation
└── requirements.txt        # Python dependencies
```


5 Run the Application

```
python dark_mode_chatbot.py
```

Open <http://127.0.0.1:8050/> in your browser to start chatting.

Training Data (`chatbot_dataset.csv`)

Question	Answer
What is SQL?	SQL (Structured Query Language) is used to manage data in relational databases.
What does a Data Scientist do?	Designs and implements statistical models, analyzes data, and provides actionable insights.

 Tip: Add more question-answer pairs to improve performance.

Contributing

Contributions are welcome! You can:

- Add more Q&A pairs to the dataset
- Improve UI/UX design
- Suggest features or optimizations

Open an issue or submit a pull request.

License

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Acknowledgements

- Built with [Dash](#) and [Scikit-learn](#)
- Tokenization with [NLTK](#)
- Inspired by interactive AI chatbots and educational projects

Made with  by **Your Name**