

Financial Chatbot – Documentation

Overview

The Financial Chatbot is a simple question–answering tool built with **pandas** for data processing and **Gradio** for the user interface. It allows users to type financial queries in natural language and get quick summaries based on a preloaded CSV dataset (`finance_data_numeric.csv`).

How It Works

1. The CSV file is loaded globally using **pandas**. Each row contains financial information (e.g. Revenue, Net Income, Assets) for different companies over several years.
2. The chatbot listens to user input through a **Gradio Textbox**.
3. The function `financial_chatbot(question)` processes the text:
 - Converts the question to lowercase.
 - Matches keywords ("`revenue`", "`net income`", "`assets`", "`liabilities`", "`cash flow`").
 - Runs the appropriate **pandas groupby/sum** calculation.
 - Formats the results into a human-readable string.
4. If no keyword is detected, the bot returns a fallback “small talk” response.

Predefined Queries

The chatbot can respond to questions containing:

- **Revenue** → Shows total revenue by company (last 3 years combined).
- **Net income** → Shows total net income by company.
- **Assets** → Shows total assets by company.
- **Liabilities** → Shows total liabilities by company.

- **Cash flow** → Shows total operating cash flow by company.

Limitations

- **Keyword-based only:** The chatbot does not understand complex or rephrased questions unless they contain one of the predefined keywords. For example, “How much money did Apple make?” will not work unless the word “revenue” is used.
- **Static dataset:** The CSV file is loaded at startup and cannot be updated dynamically through the interface.
- **No advanced NLP:** It does not parse grammar or context—only checks for keywords.
- **Aggregations only:** It always sums values over the dataset; no per-year breakdowns or averages are supported yet.