# Project Report: Financia - AI-Powered Financial Analysis Tool

Github repo link  streamlit app

## Objective

The Financia project is an advanced, AI-driven web application designed to streamline the process of financial analysis. Its primary goal is to empower users, from analysts to top-level executives, with the tools to efficiently extract, analyze, and interpret financial data from annual reports.

### Approach

approach was to build an integrated financial analysis platform using a **Streamlit** frontend for user interaction, a secure **SQLite** backend for data and user management, and a **Google Gemini** AI core for intelligent document processing. The goal was to create an intuitive tool that automates data extraction and enables deep, conversational analysis.

## Methodology

The application follows a clear, multi-step process:

1. **Authentication:** Users log in with role-specific credentials, which are verified against the SQLite database. The user's role dictates their access permissions throughout the application.
2. **Data Ingestion:** An analyst uploads a financial report as a PDF or provides a web link. The system extracts the raw text using `pdfplumber` for PDFs or `BeautifulSoup` for web pages.
3. **AI Extraction & Storage:** The extracted text is sent to the Google Gemini API with a specific prompt to identify and return key financial metrics in a clean JSON format. This structured data is then validated and saved to the SQLite database, creating a persistent record.
4. **Analysis & Visualization:** Users select a company to analyze. The application displays a historical data snapshot and provides a chat interface. User queries are sent to the AI, which returns textual insights and commands to generate interactive `plotly` charts, offering a dynamic and conversational analysis experience.

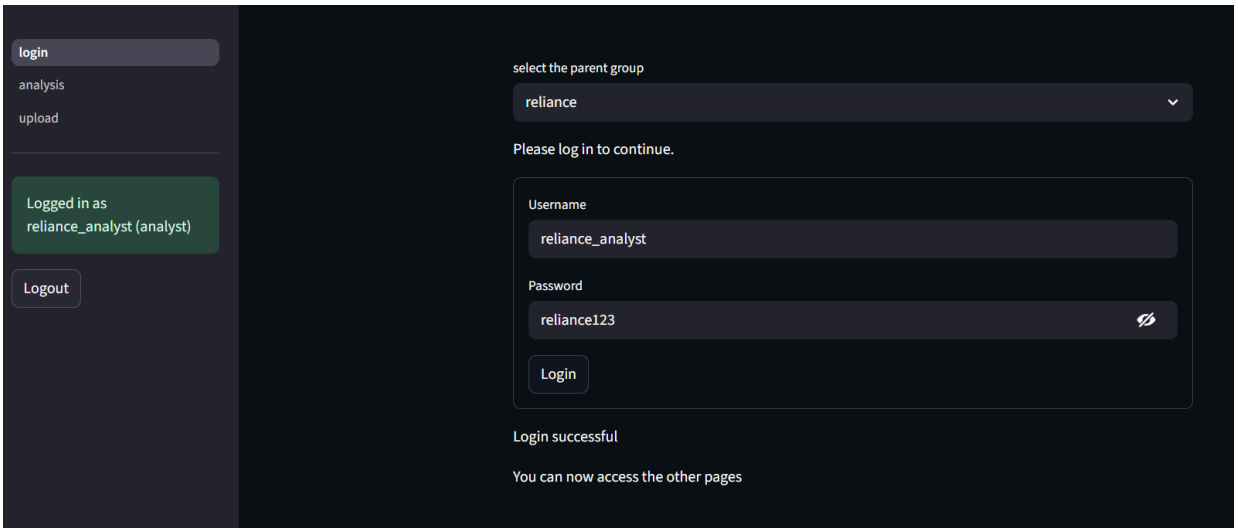
## Findings

1. AI Excels at Structured Extraction
2. Balance Sheets are easily available in websites

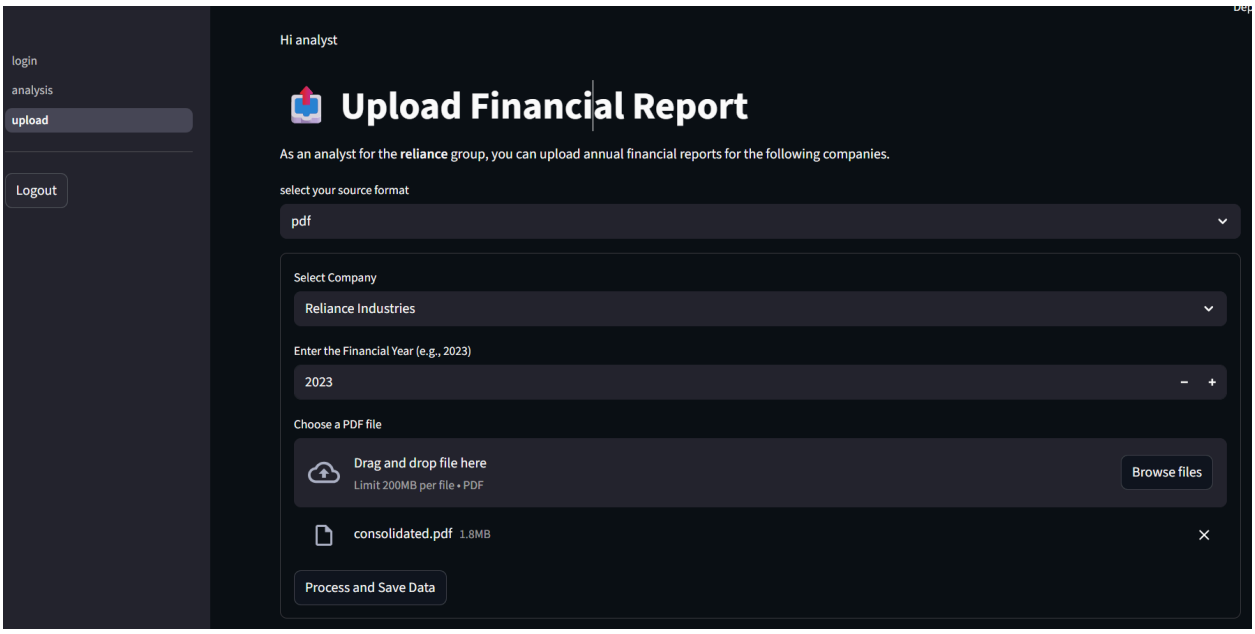
## Features

The Financia application is built with a robust set of features to deliver a comprehensive analysis experience:

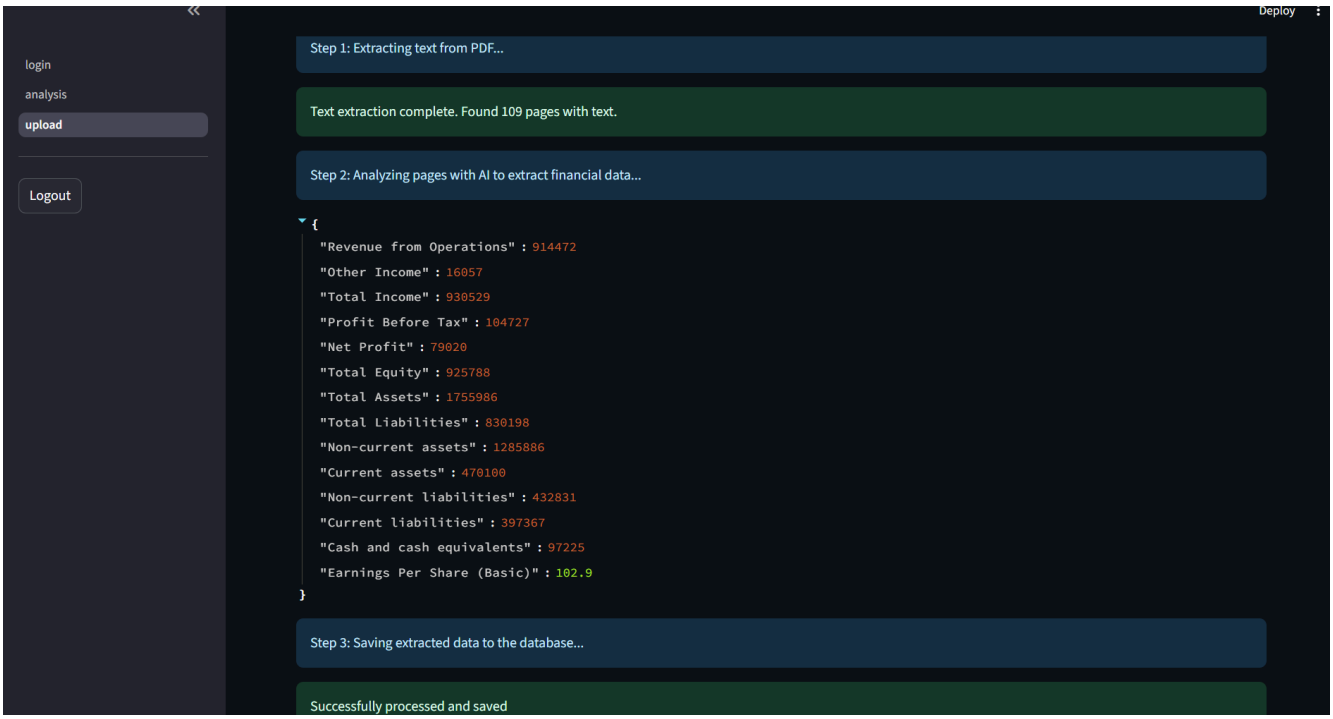
- **Secure, Role-Based Authentication:** Users log in with credentials that assign them specific roles (e.g., analyst, CEO, top management). This system, managed by a backend database, dictates their access level, ensuring data security and confidentiality.



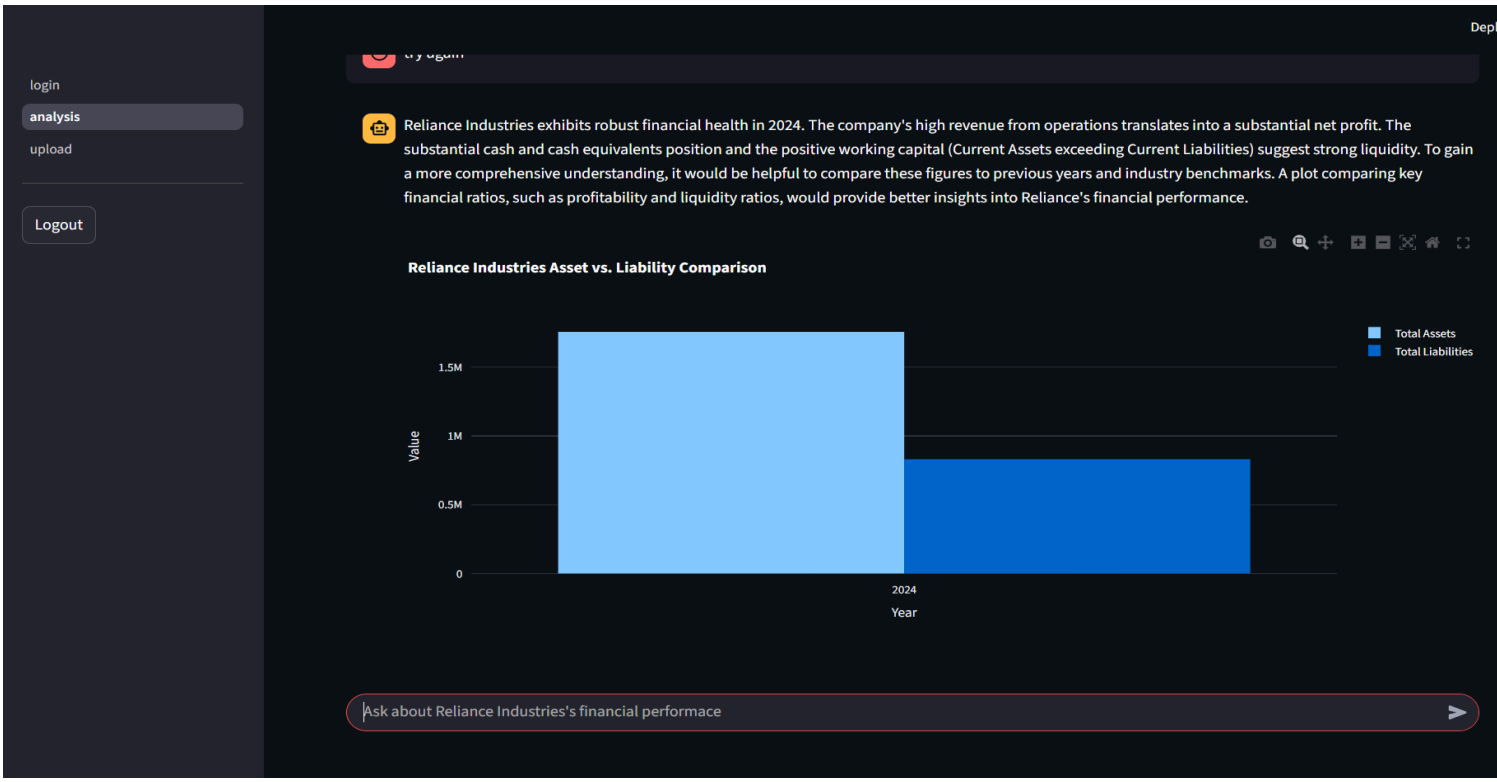

- **Dual-Mode Data Upload:** The platform supports uploading financial reports as **PDF files** or by providing a **web link**. This flexibility allows users to analyze both locally stored documents and online reports with ease.



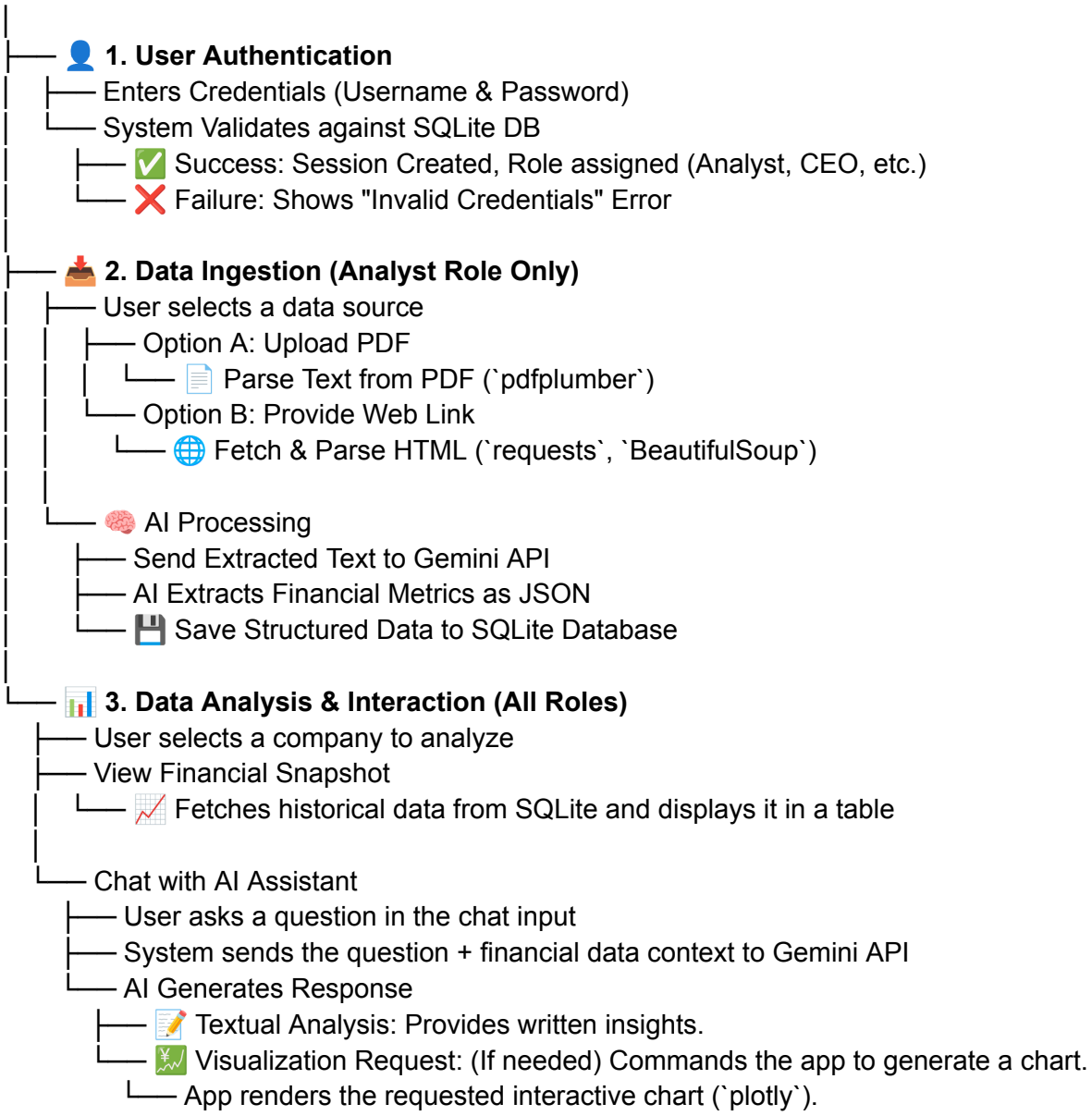
- **AI-Powered Data Extraction:** At its core, Financia uses the **Google Gemini** model to read and comprehend financial documents. It intelligently extracts key metrics such as Revenue from Operations, Net Profit, Total Assets, and Earnings Per Share, structuring the raw text into a clean, usable JSON format.




- **Conversational AI Analyst & Dynamic Data Visualization:** A standout feature is the interactive chat interface. Users can ask the AI assistant questions in plain English. The AI doesn't just provide text-based answers; it also generates **interactive charts** using Plotly to visually represent the data, such as comparing Total Assets vs. Total Liabilities.



**Financia Application Workflow**




**Potential Developments :**

- Find a better approach to use LLM for permanent users, possibly using Open Source models and containerise them using Docker as the no of api calls for gemini will be limited
- Securely hash user passwords in the database instead of storing them in plain text.
- Integrate time-series forecasting models to project future revenue and profit trends.
- Add OCR capabilities using Tesseract to process scanned, image-based PDF reports.
- Add features to export analyses to CSV/Excel and generate comprehensive PDF reports.

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