Gen AI Project- Developing an AI powered chatbot that analyzes financial documents



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**Introduction**

Generative Artificial Intelligence (GenAI) refers to advanced AI systems that can create new content, such as text, images, audio, video, and code, based on learned patterns and data. Unlike traditional AI, which primarily analyzes and predicts based on existing data, GenAI focuses on **producing novel outputs** that mimic human-like creativity and reasoning.

The integration of Generative AI (GenAI) technologies in Finance calibre competent in extracting data from unstructured data sources(e.g.: 10-k,10-Q reports) , analyze and transform in to accurate and scalable solutions, offering innovative, efficient and personalize solutions.

This project aims to harness the potential of GenAI to address complex challenges in financial analysis, forecasting, and strategic decision-making, leveraging the latest advancements in artificial intelligence.

Goals

* To extract and analyze key financial data from the client's 10-K and 10-Q documents. This involves understanding financial statements, identifying significant trends, and preparing data for AI-driven applications.
* Develop an AI-powered financial chatbot. This chatbot must be capable of analyzing financial data and providing insights that effectively communicate complex financial information in an interactive and user-friendly manner
* Focus on how AI-driven insights can be leveraged in a consulting context to provide strategic recommendations and solutions to clients

Chapter 01

Financial Analysis

Part 01-

Analysing 10 K, 10- Q reports of Microsoft, Apple and Tesla companies for year 2022, 2023 and 2024

A screenshot of a graph

Description automatically generated

Table 1.1- CSV file of finance data

Calculating revenue growth and income growth , the output is as follows.

A screenshot of a graph

Description automatically generated

Python Code for above calculation is as follows.



A white rectangular object with a black border

Description automatically generated





Revenue growth of Microsoft, Apple and Tesla companies during 2022-2024.

A graph with numbers and a line

Description automatically generated

Above graphs clearly depicts the change in Revenue of Microsoft, Apple and Tesla during time span of 2022-2024. Revenue of both Microsoft and Tesla has been increased while Apple’s revenue remains same throughout the time of consideration.

Python Code for above line graph is as follows.

A screenshot of a computer program

Description automatically generatedA hand holding a symbol

Description automatically generated

Net Income Comparison of Microsoft, Apple and Tesla companies during 2022-2024.

A graph of a number of bars

Description automatically generated with medium confidence

Above graphs clearly depicts the change in Revenue of Microsoft, Apple and Tesla during time span of 2022-2024.

Python Code for above line graph is as follows.

A screenshot of a computer code

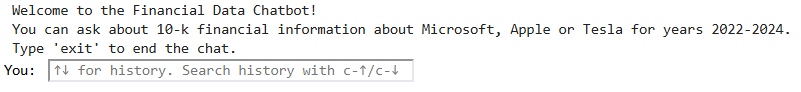
Description automatically generatedA hand holding a symbol

Description automatically generated

2.2 Chatbot Creation

Pathway

Chat Bot



2.3 Testing

Command- Exit

Output A close-up of a computer screen

Description automatically generated

Command- 

Output-

Command-

Output-

Command-

Output-

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Command- 

Output-

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2.4 Python Code

A hand holding a symbol

Description automatically generatedA screenshot of a computer code

Description automatically generated

A screenshot of a computer code

Description automatically generated

Chapter 03

References

Guide on the use of Generative Artificial Intelligence, *Government of Canada, 2024*

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