**ADTA 5770: Generative AI with LLMs - Assignment 4**

Student Name: Biniam Abebe

Domain Expertise Field: Finance/Investment

**PART I: Generative AI System for Business (20 Points)**

**Decision on What Type of Business Organization**

Our group has decided to develop a generative AI system for a financial company. After thorough brainstorming and discussion among team members, we determined that the financial sector would benefit significantly from generative AI technology. Our focus is on enhancing daily operations in the finance world by developing an AI-powered Q&A system specifically for corporate financial analysis.

The system we're developing will serve as a tool to assist with various tasks, including answering customer questions, providing personalized financial advice and tips, and helping employees create daily reports and financial summaries. We believe that implementing this LLM into a financial company's system will reduce workload for employees and make financial services more seamless for both clients and staff.

**PART II: Business and Technical Requirements of the System (30 Points)**

## **Business Values of the Generative AI System**

The financial company wants to develop this generative AI system to:

* Streamline daily workflow processes
* Reduce employee workload on routine tasks
* Improve customer satisfaction scorecards
* Provide more personalized customer experience
* Modernize their financial operations
* Support data-driven business decisions

By implementing this AI system, the company will enable its employees to focus on more complex and high-value tasks, while the AI handles routine inquiries and processes that typically consume a significant amount of time. This will create a more efficient workflow, enabling staff to provide higher-quality service to clients.

## **Business Requirements**

The business objectives that the financial organization aims to achieve with this generative AI system include:

* Automating daily tasks such as responding to customer queries and generating financial reports
* Providing customized financial advice and tips to clients
* Increasing customer interactions and satisfaction
* Seamlessly integrating the AI system into existing workflows without increasing workload
* Closing language gaps between clients and employees of diverse linguistic backgrounds
* Enabling financial advisors and staff to interact with the AI system to refine and recommend relevant content
* Supporting data-driven business improvements

## **Technical Requirements**

The technical specifications for our generative AI system include:

* **AI Platform**: Google Cloud Platform (GCP) using Vertex AI for managing, deploying, and fine-tuning machine learning workflows
* **Large Language Model**: Gemini 2.0 experimental, selected for its high performance in delivering relevant financial information and generating clear, human-like responses
* **Generative AI Platform**: LangChain (latest version)
* **Development Environment**: Google Collaboratory (Colab)
* **Technical Capabilities**:
  1. Real-time APIs for customer interaction
  2. Robust data security measures
  3. Advanced Natural Language Processing (NLP) capabilities
  4. Real-time data integration for business improvement
  5. Audit tracking functionality
  6. Natural language understanding
* **Vector Storage and Search**: Utilizing vector embeddings and vector databases for efficient content retrieval

**PART III: Data and Cloud Data Storage Requirements (40 Points)**

## **Create GCP Cloud Storage Bucket**

I have accessed the Google Cloud Console and created a bucket named "adta5770-docs-folder98" as specified in the assignment. Within this bucket, we created a subfolder called "documents," and within that, another subfolder named "pdfs" for storing our collected documents.

A screenshot of a computer

AI-generated content may be incorrect.

## **Upload Documents to GCP Bucket**

I have uploaded a file named PDFS.zip into the documents folder of our cloud storage bucket. This compressed file contains our collection of financial documents, reports, research papers, and guidelines that will form the knowledge base for our financial Q&A system.

A screenshot of a computer

AI-generated content may be incorrect.

**PART IV: Groupwork Evaluation (10 Points)**

1. **Group Number**: Group 8
2. **Group Members**:
   * Biniam Abebe
   * Srilekha Aduvala
   * Nithin Marpu
   * Joshua Terrazas
3. **Group Meetings**: Yes, our group has organized both online and in-person meetings to work on Assignment 4.
4. **Meeting Attendance**: All group members, including me, attended the scheduled meetings.
5. **Participation**: Yes, all members made reasonable efforts to participate actively in the group work.
6. **Additional Comments**: Our group has established an effective collaboration process with clear role assignments. We communicate regularly and have managed to divide the work efficiently based on each member's strengths and expertise. The combination of online and in-person meetings has allowed us to maintain good progress on the project while accommodating everyone's schedules.