Group Number: 01

Group Members Name: Vrushabh Jain

Topic: AI Financial Dashboard

Mentor Name:

Date: 28/12/25

Project Description: Cognitive Graph Portfolio Optimiser (CGPO)

The Cognitive Graph Portfolio Optimizer (CGPO) is a novel decision-support system designed to enhance financial risk forecasting and portfolio management. It uniquely fuses firm-specific insights from multimodal data specifically earnings call audio and text with a systemic, graph-based view of asset interdependencies. The system utilizes a Reinforcement Learning (RL) agent to analyze these dynamic market structures and provide optimized portfolio rebalancing recommendations.

Tasks Done:

1. Online Lecture & Data Gathering:

- Attended Online Project Lecture (08:30 am).
- Developed `survey_app.py` for field validation of research hypotheses.
- Deployed app to Streamlit Cloud and generated QR Code for data collection.
- **Lecture Topic:** Data Gathering Strategies.

2. Activities Performed

A. Cloud Backend Integration (Google Cloud Platform)

- Enabled **Google Drive API** and **Google Sheets API** in the Google Cloud Console.

- Generated a Service Account and JSON credentials (service_account.json) for programmatic access.
- Developed a Python connection script (survey_app.py) using the gspread and oauth2client libraries to authenticate and push data rows to the cloud sheet.

B. Security & Secrets Management

- Implemented a .gitignore file to explicitly exclude sensitive files (service_account.json, *.csv) from version control.
- Configured **Streamlit Cloud Secrets** to inject API credentials securely during runtime, ensuring the private key is never exposed in the public GitHub repository.
- Updated the application logic to dynamically switch between "Local Mode" (reading files) and "Cloud Mode" (reading Secrets).

C. Deployment & Testing

- Created a requirements.txt file to manage dependencies (gspread, streamlit, pandas, oauth2client).
- Deployed the application to **Streamlit Cloud** linked to the GitHub repository.
- Conducted "End-to-End" testing: Submitted dummy data via the public link and verified instant updates in the master Google Sheet.
- Formatted the Google Sheet (Freezing headers, text wrapping) for data readability.

3. Challenges Encountered & Solutions

- **Issue:** The app crashed on deployment with a ModuleNotFoundError.
    - *Solution:* Identified missing libraries in requirements.txt and pushed an updated list to GitHub.
- **Issue:** Streamlit Secrets rejected the Private Key due to formatting errors (Invalid control character).
    - *Solution:* Reformatted the JSON key into a single string to handle newline (\n) characters correctly within the TOML configuration.

4. Outcome

The "Field Validation Tool" is now live and stable. The system successfully collects user inputs on market risks and securely stores them in a central database without manual intervention. The repository is secured against credential leaks

Data Form Link (Jot form / Google Form): https://cgpo-survey.streamlit.app/