AI Intern Case Study

Improving Workflow and Debugging Strategies for Automated Investment Report Generation.

1.) Introduction

This case study focuses on designing and testing a solution to automate investment report generation for a mid asset management firm using generative AI. The goal is to streamline the manual process of creating investment reports, ensuring they are tailored to client profiles, accurate and compliant with industry standards. The Implementation involved designing structured prompts, testing the diverse inputs and refining workflows to deliver consistent and reliable outputs.

2.) Debugging Strategies:

The debugging strategies employeed during the case study were centered around ensuring accuracy, relavance, and compliance in AI generated outputs. Below are the key strategies used.

~~2.1) Debugging Strategies:~~

2.1) Input Data Validation

Challenge: Ensuring that the input data (eg: portfolio performance metrics and benchmarks) is structured and complete.

Solution: → Used JSON to standardize input data
→ Included checks for missing or incorrect fields.

2.2) Prompt Optimization:

Challenge: The initial prompts generated vague or repetitive reports.

Solution: → Iteratively refined the prompt to include clear instruction for compliance, client-specific customization and actionable insights → conducted tests using diverse clients profiles to assess prompt robustness.

2.3) Output Validation:

Challenge: Ensuring the accuracy of the generated reports relative to input data.

Solution: → Cross-checked AI generated outputs with the input portfolio data to verify consistency.
→ Emphasized quantitative performance metrics (eg: Sharp ratio, benchmark, comparisions) in the prompt to reduce factual errors.

2.4) Compliance and Disclosures:

Challenge: → Incorporating necessary disclosures into the AI generated reports to meet industry standards.

Solutions: → Added a mandatory section for compliance in the prompt.

→ Verified that outputs included disclaimers such as "Past performance is not indicative of future results.

2.5) Handling Edge Cases:

Challenge: Generating meaningful reports for unusual input data (eg: extreme portfolio allocations)

Solutions:

→ Created synthetic edge-case scenarios to test how well the AI handled unexpected inputs.

→ Refined prompts to include fallback language for cases where data might be insufficient or inconsistent.

3) Workflow Improvements:

To enhance the workflow for generating investments reports, the following improvements are proposed:

3.1) Modular Code Design:

→ Segregate input validation, prompt generation, and output rendering into distinct functions.

→ This will improve maintainability and allow easier debugging of individual components.

3.2) Automation of Input and Output Handling:

→ Develop scripts to automate the ingestion of portfolio data from spreadsheets or API's

→ Stores outputs in a structured database for further analysis or presentations.

3.3) Integrating with compliance frameworks:

→ Build a compliance checklist to automatically verify that generated reports meets regulatory standards.

4.) Observations and Results:

The current implementation successfully demonstrat the potential of generative AI in automating investments report generation.

→ Tailors to diverse client profiles

→ Consistent with input portfolio data.

→ Enhanced with actionable recommendation and compliance disclosure.

5.) Conclusion:

The automation of investment report generation using Generative AI is a promising solution for asset management firms. By addressing challanges through robust debugging and workflow enchantments, this project lays the foundations for scalable, accurate and compliant AI driven reporting.