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Project Title: Prompt Engineering and Framework Conversion for MRM

Mentor and Company: Anwesha Bhattacharyya, Wells Fargo

Period Covered: 01 Dec – 30 Dec, 2024

Project Objective: Developing a centralized repository of tailored prompts for Large Language Models, specifically optimized for the DSAI team within Wells Fargo's MRM sector, incorporating a ReAct (Reason + Action) framework for open-source LLMs after prompt hub creation.

Tasks 1 and 2: Completed

Progress Summary:

Work Completed:

- Task 3.1 (COMPLETE). Research Model Specifications and Prompting Techniques
 - Summary:
 - Research focused on blog posts and model documentation papers to identify parameters and pretraining data specifications.
 - Efforts concentrated on evaluating techniques for framing specific questions and determining suitable types of validators for use by the DSAI team.
 - Consolidated research findings into a single document to streamline practices and initiated code testing based on the gathered insights.
 - Lessons Learned:
 - Specific models demonstrate improved performance when predefined system prompts are utilized separately from the main query being asked.
 - Certain models handle chain-of-thought and iterative processing more effectively, with performance being influenced by the number of parameters used during their training.
 - Risk & Mitigation: Misalignment between model specifications and project needs or delays in accessing required environments could impact performance and testing timelines.
 - Research and documentation were completed in advance, access requests submitted early, and collaborative sessions held to address potential challenges efficiently.
- Task 3.2 (COMPLETE). Testing Prompts around research
 - Summary:
 - Research findings were refined and adapted into tailored prompts for validation tasks. Efforts included creating the necessary files for integration into Wells Fargo's internal wiki, enabling broader use.
 - Lessons Learned:
 - Certain models performed poorly when provided with prompts that lacked explicit definitions of goals alongside the questions, leading to hallucinations and inaccurate outputs.

- Validation tasks, particularly for code-based models, highlighted the critical importance of fine-tuning
- Risk & Mitigation: Overgeneralization of prompts could lead to reduced model accuracy and reliability for validation tasks when assisting, some models may handle specifics and nuances in a better direct way
 - Research and documentation were completed in advance, access requests submitted early, and collaborative sessions held to address potential challenges efficiently.

Work Scheduled Next Sprint

- Task 3. Creation of Prompt Hub
 - Final consolidation of prompts and techniques to be presented to DSAI and sister team, will be uploaded to internal wiki. Specified models will be coded for different tasks.
- Risks & Mitigations: Different prompts react differently depending on the goal of the model, specifics may be needed or may not be captured in hub.
 - Mitigation: Generalize and cover most bases so if an occurrence where a model doesn't capture their goal, recommend another one with similar performance.
- Task 4. Implement ReAct Framework
 - Engaged with GenAI team members for guidance on in-house model implementation. Conducted targeted research on the framework through blogs, papers, and Wells Fargo presentations.
- Risks & Mitigations: Variability in model responses to prompts, influenced by training parameters, could necessitate adjustments to the implementation strategy or a shift to alternative approaches.
 - Mitigation: Develop modular solutions for easy updates or replacements, conduct regular progress check-ins with the team

Work Package Updates:

	WP	Work Package Title	Scheduled Dates	Status
✓	1.	Onboarding	28 th Oct – Nov 22 nd	Complete
✓	2.	Testing performance of Large Language Models and Configuration	Nov 25 th – Dec 13 th	Complete
	3.	Creation of Prompt Hub for DSAI and MRM	Dec 16 th – Dec 27 th	In-Progress
✓	3.1.	Research Model Specifications and Prompting Techniques	Dec 16 th – Dec 18 th	Complete
✓	3.2.	Testing Prompts around research	Dec 16 th – Dec 20 th	Complete
	3.3.	Creation of Prompt Hub	Dec 18 th – Dec 30 th	In-Progress
	4.	Implement ReAct Framework	Jan 1 st – Mar 28 th	Backlog