Algorithm with Cognitive Bias and Market Irrationality for Risk-Optimized Investment Decisions

Completed Tasks This Week:

This week, I read through a lot of key academic publications. "Decision Field Theory: A Dynamic-Cognitive Approach to Decision Making in an Uncertain Environment" (Busemeyer and Townsend, 1993), which provided foundational knowledge on DFT, "Advances in Prospect Theory: Cumulative Representation of Uncertainty" (Tversky and Kahneman, 1992), which enriched my understanding of cognitive biases in financial decisions, and "A Deep Reinforcement Learning Framework for the Financial Portfolio Management Problem" (Jiang et al These texts helped me clarify the theoretical basis of my thesis.
Data Collection: I worked hard to gather the information needed for this project. I discovered several sources of financial market data that would help me comprehend market dynamics and irrationality. While the process was difficult, I made significant progress in gathering useful data that would serve as the foundation of my project.

Challenges Overcome:

Acquiring relevant investor behavior data, which is critical for recognizing and implementing cognitive biases, is proving difficult. Currently, the availability and anonymization of such data are barriers.
The Nature of Cognitive Biases: The nature of cognitive biases is complicated, and accurately representing them in a reinforcement learning model is a difficult challenge. Further investigation and comprehension of these biases are required.

Steps to Take the Following Week:

Data Cleaning: The acquired data will be cleaned and structured so that it may be used effectively in the algorithm.
The next stage is to begin the early design of the reinforcement learning algorithm. This will be based on the theoretical framework of DFT as well as the knowledge gathered about cognitive biases from the evaluated literature.
Continued Research: I intend to read more material in order to gain a better grasp of the complex elements impacting investment decisions, notably the impact of cognitive biases in financial decision making.