CS-787 COURSE PROJECT
AlphaAgents

Aamir Ahmad 230010
Aaryan Maheshwari 230022
Aviral Gupta 230246
Pallav Rastogi 230731
Suyash Kapoor 231066

Abstract

This project explores the use of a Large Language Model based multi-agent system to support stock investment decision-making. The framework enables multiple specialized agents to independently analyze a stock from different financial perspectives and then collaborate through structured discussion to reach a unified recommendation. By integrating diverse viewpoints such as fundamentals, valuation, sentiment, and technical indicators, the system aims to produce more balanced and well-reasoned conclusions compared to a single-model approach. When tested on real market data, the multi-agent collaboration generated investment decisions that were more transparent and better supported by evidence. The results demonstrate the potential of coordinated agent-based reasoning for improving equity research and portfolio management.

1 Introduction

Equity portfolio management requires analyzing large amounts of financial information and forming decisions based on diverse and often fast-changing data sources. Traditionally, this work is carried out by human analysts who must interpret financial reports, market sentiment, price trends, and economic indicators to recommend investment actions. However, the volume and complexity of information involved can make the process demanding and susceptible to human limitations, such as cognitive bias, emotional influence, and inconsistent judgment.

Recent advancements in artificial intelligence, particularly Large Language Models, have created opportunities to support and enhance equity research by enabling automated reasoning over unstructured financial data. In addition, multi-agent systems have emerged as a promising approach for complex decision-making, where multiple AI agents collaborate using different analytical perspectives rather than relying on a single model.

Motivated by these developments, this project investigates whether a coordinated multi-agent framework can contribute to more reliable and transparent investment decisions. The goal is to evaluate how combining multiple viewpoints can strengthen the investment process and provide a structured, explainable alternative to both manual decision-making and single-model AI outputs. Through experiments on real stock data, the project aims to explore the practical value of collaborative agent reasoning in supporting equity research and portfolio management.

2 Methodology

2.1 Multi-agent System for Equity Research