

Algorithmic Trading Project: Overview and Timeline

Project Overview

The algorithmic trading project aims to develop a web-based platform that leverages advanced artificial intelligence techniques, specifically sentiment analysis and deep reinforcement learning (DRL), to provide users with predictive insights into financial markets. The primary focus will be on stock trading, allowing users to analyze historical price data and market sentiment derived from news articles.

Key Objectives:

- Sentiment Analysis:** Implement a robust sentiment analysis model that processes entire news articles to determine market sentiment and its potential impact on stock prices.
- Deep Reinforcement Learning:** Develop a DRL framework that enables the system to make predictive trading decisions based on evolving market conditions and sentiment signals.
- User-Centric Interface:** Design a clean and intuitive web interface that allows users to visualize data, monitor predictions, and track sentiment over time.
- Historical Data Visualization:** Integrate historical stock price data with sentiment scores to allow users to explore the relationships between market news and price movements.

Expected Outcomes:

- A fully functional web application that offers predictive analytics for stock trading.
- Enhanced understanding of how sentiment influences market trends and trading strategies.
- An innovative approach to algorithmic trading that combines traditional market analysis with cutting-edge AI technologies.

Timeline

Phase	Tasks	Duration	Completion Date
Phase 1: Research & Planning	<div>- Conduct literature review on sentiment analysis and DRL</div> <div>- Define project scope and features</div> <div>- Finalize tech stack</div>	1 month	December 1, 2024
Phase 2: Design	<div>- Create wireframes for the UI</div> <div>- Design database schema</div> <div>- Develop user stories</div>	1 month	January 1, 2025
Phase 3: Development	<div>- Implement landing and login pages</div> <div>- Develop the dashboard</div> <div>- Integrate sentiment analysis and DRL models</div> <div>- Build historical data visualization</div>	2.5 months	March 15, 2025

Phase	Tasks	Duration	Completion Date
Phase 4: Testing	<div><div>- Conduct unit tests and integration tests</div><div>- Perform user testing for feedback</div><div>- Fix identified bugs</div></div>	2 weeks	March 30, 2025
Phase 5: Deployment	<div><div>- Prepare the application for deployment</div><div>- Set up hosting and domain</div><div>- Launch the platform</div></div>	1 week	April 6, 2025
Phase 6: Documentation	<div><div>- Write user manuals and technical documentation</div><div>- Prepare final project report</div></div>	3 days	April 9, 2025

Completion

The project is expected to be fully functional and ready for evaluation by April 9, 2025, allowing time for any adjustments based on user feedback and testing.

Recommended Readings for Phase 1

Books:

1. "Algorithmic Trading: Winning Strategies and Their Rationale" by Ernie Chan

2. "Advances in Financial Machine Learning" by Marcos López de Prado

3. "Sentiment Analysis and Opinion Mining" by Bing Liu

4. "Deep Reinforcement Learning Hands-On" by Maxim Lapan

Papers:

1. "Deep Reinforcement Learning for Trading" by Jiang et al. (2017)

2. "Market sentiment and its impact on the stock market" by Loughran and McDonald (2011)

3. "A Survey on Sentiment Analysis and its Applications" by P. D. Joshi et al. (2017)

4. "Financial News Predicts Stock Market Volatility" by D. J. Tetlock (2007)