HackWithHyderabad Hackathon Documentation

Stock Consultant Agent

1.Overview

Problem Statement Many beginners struggle with the stock market because they lack a simple, reliable guide. Current apps only display prices and charts but do not explain what actions to take. This forces students and small investors to rely on friends or unreliable online videos, which often leads to poor and random financial decisions.

Solution We propose an AI-powered Stock Market Consultant Agent that simplifies investing by analyzing a user's portfolio and providing actionable, easy-to-understand advice in plain English such as "buy," "sell," or "hold." The agent will also: - Suggest diversification opportunities to reduce risk. - Track usage and performance over time. - Provide a beginner-friendly interface for investors with little or no prior experience.

This solution directly addresses the knowledge gap and empowers individuals to make informed, confident investment decisions.

2.Objectives

Build an AI-powered portfolio analysis agent. - Provide simple, actionable investment advice in plain language. - Suggest diversification strategies for safe investing. - Track user decisions and improve guidance over time. - Develop a scalable tool that can help both students and small investors.

3.Theoretical Background

Importance of Simplified Investment Guidance Beginners face difficulty due to the complexity of stock markets. Without proper guidance, they often chase trends, rely on rumors, or make emotional decisions. A clear, AI-based guide reduces this confusion by converting raw data into direct advice.

Role of AI in Finance AI is widely used in finance for prediction, classification, and recommendation systems. - Prediction: Forecasting stock price trends. - Classification: Categorizing actions as Buy / Sell / Hold. - Recommendation: Suggesting portfolio improvements. Our approach makes AI accessible by presenting its insights in plain English for beginners.

Why This Approach is Unique - Combines data-driven AI with human-friendly communication. - Focuses on learning and guidance, not just numbers. - Encourages responsible investing rather than speculation.

4.Methodology & Implementation

Frontend - User-friendly interface where users input their portfolio. - Clear dashboard displaying AI advice: Buy, Sell, Hold.

Backend Agent - Ingests user's portfolio data. - Connects to live stock data sources (via APIs). - Analyzes both portfolio and market trends. - Generates advice using predefined rules or machine learning models.

Integration - Pathway $\rightarrow$ live data ingestion. - Flexprice $\rightarrow$ billing and usage tracking (subscription or per-advice model).

Workflow
1. User inputs portfolio.
2. Agent fetches live market data.
3. AI analyzes data + portfolio.
4. Output: simple, actionable advice.
5. Diversification suggestions to reduce risk.

5. Technology Stack
Frontend: HTML, CSS, JavaScript (React/Vue for dynamic UI).
Backend: Node Js.
Database: Simple storage for portfolios and usage data.
Core Integration: Pathway for stock data, Flexprice for billing.
Data Source: Mock stock data (CSV / API) during hackathon.

6.Feasibility and Market Use

Feasibility Highly feasible within hackathon timeline. Core components (UI, data ingestion, AI model) are modular and easy to integrate. Pathway and Flexprice documentation ensures smooth setup.

Market Use

- Students $\rightarrow$ want to learn and practice investing.

- Small investors $\rightarrow$ want reliable, low-cost advice.

- Anyone $\rightarrow$ looking for quick, trustworthy guidance.

Revenue Model: Subscription-based SaaS (billing per portfolio analysis or advice).

7.Challenges & Solutions Challenge:

Stock market is volatile and noisy $\rightarrow$ Solution: Data preprocessing and filtering. Challenge: Beginners struggle with jargon $\rightarrow$ Solution: Plain English advice with explanations.

Challenge: Risk of over-reliance on AI $\rightarrow$ Solution: Include disclaimers and promote financial literacy.

Challenge: Limited hackathon time $\rightarrow$ Solution: Use simple rule-based + mock data, scalable later.

8.   Common Issues & Troubleshooting

- Data Quality: Use APIs or verified mock datasets.

- Overfitting AI model: Apply cross-validation and test on unseen data.

- User Trust Issues: Display reasoning behind advice (e.g., "Stock A fell 15% in 3 months, consider selling 20%").

9. Glossary & Benchmarks

- Portfolio: A collection of stocks owned by a person.

- Diversification: Spreading investments across sectors to reduce risk.

- Buy / Sell / Hold: Basic investment actions. - Robo-advisor: An AI-driven financial guide.

Benchmarks:

- $\geq$ 80% accuracy compared to expert advice.

- $\leq$ 2 sec response time for advice.

- $\geq$ 90% user satisfaction (survey-based).

10. Conclusion

The AI-Powered Stock Market Consultant Agent solves the critical problem of beginner confusion in the stock market by offering actionable, easy-to-understand advice. With live data integration via Pathway, billing support via Flexprice, and a simple UI, the tool has strong feasibility and a clear market potential. This project not only simplifies investing for students and small investors but also lays the foundation for a scalable, subscription-based product that can grow into a trusted financial advisor platform.