Agile Vision Document

[FinWise AI]

# Product vision:

FinWise AI is an intelligent, interactive stock trading simulator that combines price forecasting, news sentiment analysis, and technical indicators to help retail investors and learners simulate trades, understand market behavior, and receive AI-generated insights — all in a safe, educational environment.

FinWise AI enables users to experience hedge fund–style decision-making with complete transparency, empowering them to learn, experiment, and invest smarter.

# Objectives:

### Objective 1:

Provide AI-driven trade signals

85%+ F1 score in classification of Buy/Sell/Hold signals

### Objective 2:

Offer educational insight into market behavior

>90% of simulated trades accompanied by human-readable explanation

### Objective 3:

Simulate realistic trading environment

Accurate backtesting with historical market data (≥ 5 years)

### Objective 4:

Scalable, maintainable full-stack deployment

85%+ F1 score in classification of Buy/Sell/Hold signalDockerized architecture with CI/CD pipeline on GitHub Actions

### Objective 5:

Provide AI-driven trade signalAttractive UI/UX for non-technical users

User feedback average rating ≥ 4.5 / 5 in usability testing

# User Personas:

### 👤 Persona 1: The Aspiring Retail Trader

• Age 20–35, some investing interest, no CS background

• Goal: Learn trading logic with low risk

• Pain point: Doesn’t understand indicators, hates black-box AI

### 👤 Persona 2: The Junior Data Scientist

• Age 22–28, technical background

• Goal: Understand real-world model deployment

• Pain point: Lack of end-to-end portfolio projects with ML + full-stack

# Product Scope:

## Must-Have:

• ✅ LSTM-based price predictor

• ✅ FinBERT/VADER sentiment analyzer

• ✅ Trade decision engine (Buy/Sell/Hold)

• ✅ Trade simulator with backtesting

• ✅ Dashboard with portfolio stats, charts, and news feed

• ✅ Model explanation interface

## Nice-to-Have:

• 🔁 Reinforcement learning (e.g., Q-learning)

• 🧠 Personalized learning coach (adaptive feedback)

• 📱 Mobile UI (Flutter or React Native)

## Won’t Have (for now):

• ❌ Real-money trading integration

• ❌ Blockchain features

• ❌ Live social feed

# Key Features:

## 📈 Time-Series Forecasting

Predict stock prices using LSTM/GRU

## 📰 Sentiment Analysis

Analyze news headlines for bullish/bearish trends

## ⚖️ Hybrid Trade Engine

Combine technicals, ML, sentiment for decision

## 🧪 Backtester

Simulate trades on real historical data

## 📊 Interactive Dashboard

View positions, portfolio returns, trades, and explanations

## 📚 Trade Coach (Explainability)

Explain why a recommendation was made using SHAP/rules

## 🧱 Modular Microservice API

Decoupled architecture for ML, UI, and logic layers

# Assumptions & Constraints:

• 💾 Data from Yahoo Finance, NewsAPI, or scraped sources

• ⚠️ Market predictions are for educational purposes only

• 🧠 ML training occurs offline; inference is real-time

• 🌐 App hosted on free-tier Render/Hugging Face for MVP

• 🚀 MVP to be completed in ~6 weeks with 2 iterations per week

# Risks:

Model underfitting / overfitting

Use proper time-series validation, cross-validation

Sentiment analysis inconsistency

Ensemble multiple sentiment tools

UI/UX complexity for non-technical users

User testing with feedback loops

Deployment errors due to ML model size

Use model quantization or cloud inference (e.g., Hugging Face Inference API)

# Definition of Done (DoD):

• All models trained and evaluated

• Backtests produce consistent results

• Dashboard runs live with deployed API

• All code is versioned, documented, and containerized

• GitHub repository includes README, license, contribution guide, and demo