InvestGrow - A Financial Investment Assistant

Type: Full-Stack Web Application | **Tech Stack**: Django, PostgreSQL, Plotly.js, Celery, Redis, XGBoost, LSTM
Role: Developer & Designer | **Duration**: Academic Final Year Project (University of Leicester)

Overview
InvestGrow is a web-based platform designed to bridge the gap between financial literacy and practical investing. Targeted at beginners and intermediate users, the platform combines real-time stock analysis, educational gamification, and AI-powered recommendations to support data-driven investment decisions.
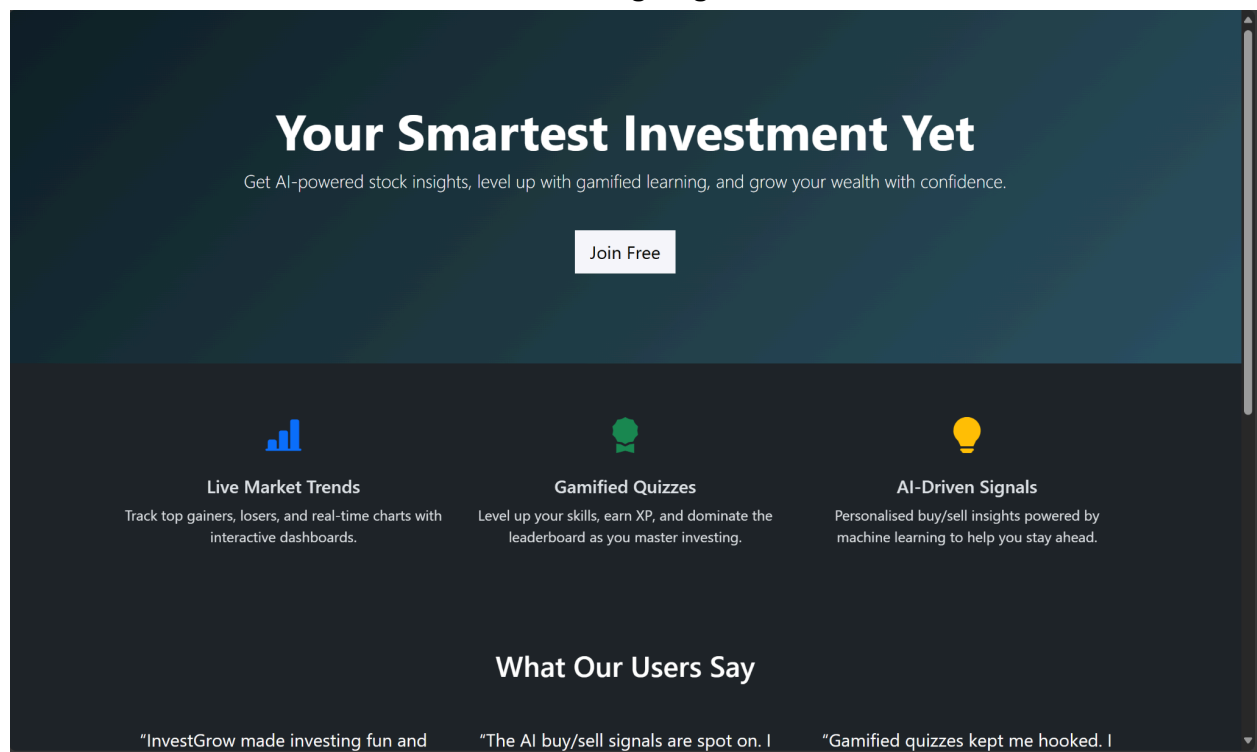
Key Features

- **Buy/Sell Signal Generator**: Uses XGBoost to provide actionable investment suggestions based on technical indicators and risk preferences.

- **What-If Simulator**: Employs LSTM to forecast future stock trends and visualise hypothetical investment outcomes.

- **Gamified Learning**: Includes quiz-based progression, XP tracking, and a dynamic leaderboard to foster continuous learning.

- **Real-Time Data & News**: Fetches market data from Yahoo Finance and current events from NewsAPI to contextualise insights.

- **Watchlist & Personalization**: Allows users to manage stock watchlists and receive sector-based suggestions.

- **Asynchronous Processing**: Long-running ML tasks are handled in the background with Celery and Redis to maintain responsiveness.

- **Accessibility-First Design**: Responsive UI with keyboard navigation, theme toggling, and clean UX for all experience levels.

Outcome
InvestGrow was successfully tested with diverse users, showing positive feedback on usability and educational value. While the ML models showed limitations in predictive accuracy (e.g., ~56% directional accuracy for XGBoost), they were effective in providing meaningful, contextual insights. The platform lays a solid foundation for further expansion into financial education or fintech onboarding tools.

Screenshots

Landing Page

Login Page (with OAuth login)

InvestGrow   Dashboard   Buy/Sell Generator   What-if Scenarios   Quiz   Leaderboard   Help

Interactive Stock Dashboard

Select a stock symbol and time range to visualise its closing prices.

| AAPL | Daily ⌄ | View Relevant Info |

AAPL - daily Closing Prices

AAPL - Daily Closing Prices

Company Fundamentals

📊 Market Cap: $3,102,464,278,528

📈 P/E Ratio: 32.30482

📉 EPS: 6.43

💰 Dividend Yield: 50.0%

📊 Sector: Technology

🌎 Country: United States

Related News

China's Xiaomi will spend $7 billion on homegrown chips amid the trade war

📌 Stocks I'm Watching

📌 Stocks I'm Watching

⊕ Add Stock

Symbol	Name	Price	Change	Market Cap	P/E	Actions
GOOGL	Alphabet Inc.	$167.195	0.66 (0.39%)	2036150960128	18.660156	Remove
AAPL	Apple Inc.	$207.7398	-1.04 (-0.50%)	3102760239104	32.307903	Remove
TSLA	Tesla, Inc.	$348.74	6.65 (1.94%)	1123277602816	200.42528	Remove
HSY	The Hershey Company	$156.565	0.01 (0.01%)	31720695808	19.281404	Remove
MSFT	Microsoft Corporation	$455.97	-2.90 (-0.63%)	3389015457792	35.23725	Remove

⌄ Show More

Suggested Stocks

Symbol	Name	Price	Change	Market Cap	P/E	Actions
AMD	Advanced Micro Devices, Inc.	$113.585	-1.15 (-1.01%)	184166727680	82.90876	Add
NVDA	NVIDIA Corporation	$133.985	-1.59 (-1.17%)	3267572531200	45.573128	Add

Latest Financial News

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Bonds Sell Off After U.S. Debt Downgrade. 30-

Market Summary

S&P 500: $5939.02	▼ -24.58 (-0.41%)
Nasdaq: $19140.19	▼ -75.27 (-0.39%)
Dow Jones: $42634.79	▼ -157.28 (-0.37%)

Top Gainers & Losers

| Top Gainers | |
| D-Wave Quantum Inc.: +32.02% |
| Agilysys, Inc.: +20.43% |

Buy/Sell Signal Generator

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Buy/Sell Signal Generator

Analyse stock data using technical indicators and a trained ML model to generate buy signals.

Results may not exactly reflect real-world outcomes and are intended for illustrative purposes only. ✕

| Search for stocks (e.g., Tesla, Appl | High Risk ▾ | Analyse |

Recommendation
🤔 **Recommendation: HOLD NVDA** (Risk: High)
📊 **Predicted 5-day return:** 50.00%
🧠 **Why?**
- Indicators do not show a strong buy or sell signal
- RSI: 88.5
- Volatility: 8.02
- Model Confidence: 0.0%

Interactive Signal Chart

NVDA Price Chart (Buy Signals Highlighted)

150

—— Price
▲ Buy Signal

What-If Investment Analysis

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What-If Investment Analysis

See how much your investment would be worth today — or up to 30 days into the future — if you had invested on a specific date.

Results may not exactly reflect real-world outcomes and are intended for illustrative purposes only. ✕

Avoid selecting weekends or public holidays as investment dates, as market data may be unavailable. ✕

| Stock Symbol | Investment Date (Start) | End Date | Amount (£) |
| Search for stocks (e.g., Tesla, Apple | dd-mm-yyyy 📅 | dd-mm-yyyy 📅 | |

Analyse

Show Past Analyses

Past Completed Analyses

Symbol	Investment Date	End Date	Final Value	Completed On	Result
AAPL	2025-05-01	2025-05-21	£101.02	2025-05-13 09:08	View
TSLA	2025-05-01	2025-05-28	£111.88	2025-05-13 09:07	View
AAPL	2025-04-03	2025-05-08	£981.49	2025-04-30 15:03	View

What-If Investment Analysis (continued)

Your What-If Investment Result

Investment Analysis for AAPL

Investment Date	2025-05-01
End Date	2025-05-21
Price on Investment Date	£209.08
Price on 2025-05-21	£211.2
Investment Amount	£100.0
Final Value	£101.02
Percentage Change	1.02%
Profit	You would have gained 1.02%

Stock Price Growth Over Period

AAPL Stock Price from 2025-05-01 to 2025-05-21

- Actual Price
- Predicted Price

210

Quiz Page

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Intermediate

XP: 180 XP / 260 XP to Level Up

Note: XP only updates on the Leaderboard after passing a level!   ✕

Quiz 1	Quiz 2	Quiz 3	Quiz 4
XP: 20 / 50	XP: 20 / 50	XP: 10 / 50	XP: 0 / 50
Start Quiz	Start Quiz	Start Quiz	Start Quiz

Quiz History

View your past quizzes, correct answers, and explanations.

Beginner

Quiz 1	⌄
Quiz 2	⌄

Leaderboard

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🏆 Leaderboard 🏆

Top users ranked by total XP.

Note: XP only updates on the Leaderboard after passing a level!   ✕

Rank	User	XP
#1	jaya	200
#2	v	190
#3	aurora	140
#4	user4	130
#5	zainab	130
#6	avi	130
#7	user1	120
#8	user2	120
#9	diadb	0

Help/FAQ

InvestGrow   Dashboard   Buy/Sell Generator   What-if Scenarios   Quiz   Leaderboard   Help

Search FAQs...

Technical Help

I can't log in or sign up   ⌄

My email isn't verified   ⌄

Watchlist not saving   ⌄

Quiz XP isn't updating   ⌄

Charts aren't loading   ⌄

Data seems outdated   ⌄

Investment Questions

What are XP and Levels?   ⌄

What's on the Dashboard?   ⌄

How does the Leaderboard work?   ⌄

What is the What-If Analysis?   ⌄

Where do you get your news?   ⌄

Profile with Theme Toggler

Profile

Username: zainab

Email: zainabzafar695@gmail.com

Email Verified: True

Quiz Progress

Level: Intermediate

Total XP: 180

Account Settings

Change Password

Manage Emails

Switch Theme 🌓