🌐 Stock Prediction Platform

AI Stock Prediction and Analysis System

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System Introduction

This is a stock prediction platform based on AI and financial data analysis.

It possesses the following capabilities:

•   Allows users to input stock symbols for automated operation.

•   Real-time acquisition of Yahoo Finance data for time-series prediction.

•   Utilizes ChatGPT (gpt-4o) to predict news sentiment.

•   References the company's fundamental indicators.

•   Incorporates an LSTM model to achieve longer-term stock price predictions.

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Technical Components

🤖 AI Technology

•   LSTM Execution for Prediction: Employs a multi-layer LSTM + Dropout + Dense combined structure.

•   ChatGPT Sentiment Analysis: Analyzes sentiment fluctuations in stock market news to influence predictions.

•   Real-time adjustment of the accuracy ratio of news sources.

🏛 Data and Indicators

•   Yahoo Finance API: Loads historical stock data.

•   TA-Lib: Calculates MACD, RSI, KDJ, MA, Moving Averages.

•   NewsAPI: Searches for current news using technology/finance keywords.

•   Fundamental Analysis: EPS, PE ratio, PB ratio for supplementary visuals.

🚀 ML/AI Techniques

•   MinMaxScaler for data scaling.

•   EarlyStopping for automatic training termination.

•   TimeSeriesSplit for time-series cross-validation.

- ChatGPT for optimizing the final model judgment.

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💼 Benefits for Enterprise Users

★ It can help users to...

- Select stocks with the highest predictive potential on the spot.

- Integrate professional data, technical indicators, and sentiment analysis for comprehensive prediction.

- Quickly analyze company news and announcements to support investment decisions.

🚀 User-Friendly Front-end UI

- Streamlit with Sidebar + Candlestick Chart + Indicator Chart + Sentiment Analysis Table.

- Real-time display of news and predictions upon entering a stock symbol.

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💡 Features

Function	Technology Used	Key Advantages
Stock Data Retrieval	yfinance API	Automated data fetching + visualization
Sentiment Analysis	ChatGPT / FinBERT	Influences prediction models simultaneously
LSTM Execution	TensorFlow Keras	Mature execution with EarlyStopping
Internal Data Validation	TimeSeriesSplit	Prevents overfitting; optimizes interactions
User Model Management	model_v{n}.h5	Independent model management per stock

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✅ Why is it worth recommending?

- Fully automated prediction process.

- Incorporates triple analysis of text sentiment, technicals, and fundamentals.

- Provides an additional perspective by leveraging LSTM + ChatGPT for cross-model optimization.

- Supports persistent prediction for users' own stock or ETF research portfolios.

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