Stock Price Trend Prediction with LSTM

Objective:

To predict future stock prices using deep learning (LSTM) and provide an interactive forecasting tool via a web-based interface, helping investors and analysts visualize trends and make informed decisions.

Overview:

The AI-Powered Stock Price Predictor is a web application that uses Long Short-Term Memory (LSTM) networks to forecast future stock prices based on historical data. It leverages time-series modeling and integrates with Streamlit for a clean and interactive frontend. Users can input date ranges, choose forecast length, and visualize trends instantly.

Key Features:

Fetches historical stock data (e.g., INFY.NS) from Yahoo Finance
Preprocesses and scales closing price data
Trains a 2-layer LSTM model with dropout regularization
Predicts future stock prices (1 to 100+ days)
Allows CSV upload for custom prediction
Interactive date-to-date filtering
Stylish dark-themed Streamlit interface
Real-time visualization:
Actual vs Predicted graph
Forecast chart
Loss curve
Scatter plot
Download prediction results as CSV

How It Works:

1. Data Preparation:

Downloads data using yfinance, selects closing prices, and normalizes with MinMaxScaler.

2. Model Training (Offline):

Trains an LSTM model on past 60-day sequences and evaluates performance using RMSE, MAE, and R^2 Score.

3. Prediction & Visualization:

Loads the trained .h5 model and scaler in the Streamlit app to generate and display predictions dynamically.
Technologies Used:
Python – Core language
TensorFlow/Keras – LSTM model
Scikit-learn – Preprocessing and metrics
yfinance – Stock data scraping
Streamlit – Web-based UI
NumPy, Pandas, Matplotlib – Data handling and visualization

Conclusion:

This project demonstrates how AI can be applied to financial forecasting using deep learning and interactive dashboards. It simplifies technical analysis for end-users and can be expanded to support multi-stock comparison, live feeds, and deployment on mobile devices or dashboards for traders and analysts.

AI-Powered Resume Ranker

Introduction:

In today's competitive job market, recruiters often receive hundreds of resumes for a single job opening. Manually screening each resume is time-consuming and can lead to bias and human error. To solve this, the AI-Powered Resume Ranker was developed. The system analyse PDF resumes and compares them with a job description using various scoring methods. It extracts and cleans text from each resume, applies NLP techniques for keyword and skill detection, and calculates a final score based on multiple factors. Resumes are then ranked and presented to the user via a simple Flask web interface. An Excel report of the rankings is also generated for download.

Abstraction:

This project focuses on transforming the traditional resume screening process through intelligent automation. The AI-Powered Resume Ranker uses a combination of NLP techniques and scoring algorithms to assess how well a candidate's resume matches a given job description.

Scoring technique:

Each resume is scored based on five key factors: TF-IDF similarity (25%) measures how closely the resume matches the job description; keyword matching (20%) checks for relevant terms using fuzzy logic; experience scoring (20%) estimates total years of work by detecting date patterns; education scoring (15%) identifies degrees and institutions; and skill matching (20%) evaluates both technical and soft skills from a predefined skill list. These scores are combined into a final weighted score for each resume, which is then used to rank them from most to least suitable.

Tools Used:

- Python – Core programming language for data handling and backend logic
- Flask – Lightweight web framework for building the interactive web interface
- PyPDF2 – For extracting text from PDF files
- SpaCy – Used for advanced NLP preprocessing
- Scikit-learn – For TF-IDF vectorization and similarity measurement
- FuzzyWuzzy – Enables approximate keyword matching using fuzzy logic
- Pandas – Efficient handling of structured resume data
- XlsxWriter – Generates downloadable Excel reports for HR teams

Features:

Key features include resume upload in PDF format, automated text extraction and preprocessing, intelligent keyword and skill matching, experience and education evaluation, multi-factor scoring, downloadable Excel reports, and a clean, user-friendly interface. The system ensures fair and data-driven resume evaluation, reducing the burden on recruiters and enhancing the candidate shortlisting process.

Conclusion:

The AI-Powered Resume Ranker offers an innovative solution to automate one of the most time-consuming tasks in hiring. By applying modern data science and NLP techniques, it ensures fair, fast, and accurate resume screening. Future improvements may include support for other file formats, integration with popular applicant tracking systems (ATS), and bulk resume processing to enhance usability and scalability.