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| **III Year B. Tech II Semester Mini Project Work**  **Project- Pulse**  **Branch : CSE(DS) Academic Year : 2024-2025**  **Course Name : Mini Project with Seminar Course Code : GR22A3089** | | | |
| **Domain** | **Financial Technology (FinTech)** | | |
| **Project Title** | **Smart Investment Planner Using ML** | | |
| **Abstract**  Accurate stock price prediction is a longstanding challenge due to the volatile and nonlinear nature of financial time series. This paper presents a personalized stock recommendation system for the Bombay Stock Exchange (BSE) that integrates Hilbert Transform-based signal decomposition with Temporal Convolutional Networks (TCN) for time series forecasting. The model adapts to individual investor profiles—considering risk, budget, and strategy—and ranks stocks based on projected returns and trend strength. Real-time stock data is sourced via the YFinance, and recommendations are delivered through an interactive Streamlit interface. Experimental results confirm the system’s superior prediction accuracy and practical value over traditional models | | | **Objectives**   * Live Market Data Integration – Fetch real-time stock prices to ensure recommendations are based on the latest market trends. * Extracting the Intrinsic Mode function using the Hilbert-Huang Transform (HTT) and advanced algorithms. * Forecasting the trends using the advanced techniques like Temporal convulation Network. * Risk Assessment – Categorize stocks based on risk levels and align them with the investor’s risk tolerance. |
| **Architecture Diagram** | | | **Significance of the work**   * TCN-based modelling: Superior to RNNs/LSTMs in capturing long-term dependencies. * Custom decomposition improves data quality and feature richness. * Investor personalization: Makes the system usable for a wide range of investment styles (conservative to aggressive). * Visual insights help users make more informed decisions. |
| **Dataset Details**  Source: Yahoo finance.  Content: Historical stock data (OHLC - open, high, low, close). |
| **Standards and tools:**   * Machine Learning Model: Temporal Convolutional Network (TCN). * Decomposition Method: Hilbert Transform, Empirical Mode Decomposition (EMD). * Programming Tools: Likely Python-based (not explicitly stated), using APIs like YFinance * Visualization: Custom graphical outputs for predictions and insights. | | **Results and Analysis:**     * Model tested against various test cases (e.g., data fetching, decomposition accuracy, risk alignment, dynamic updates). * Recommendation accuracy validated against real market trends. * Visual outputs demonstrate alignment with market behavior and user preferences | |
| **Project Content’s Google Drive Link:**  https://drive.google.com/drive/folders/1WVZ25-ZlDWZXLOMrKQvQhNwVfUYmurbu | | | |
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