**Gokaraju Rangaraju Institute of Engineering and Technology**

**(Autonomous)**`

**Department of Data Science**

**III-year B. Tech II Sem Mini Project Work**

**Abstract Form**

**Branch : CSE(DS)** **Academic year : 2024-2025**

**Course name :** **Mini Project with Seminar Course Code :** **GR22A3089**

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| **Domain** | Financial Technology (FinTech) | | | |
| **Project Title** | Smart Investment Planner Using ML | | | |
| **Batch Number:** | 10 | | | |
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| **ABSTRACT** | | | | |
| Stock market prediction remains a complex and dynamic challenge due to the inherent volatility, nonlinearity, and noise in financial time series data. To address these complexities and enhance investment decision-making, we propose a novel stock recommendation framework tailored for the Bombay Stock Exchange (BSE), integrating advanced signal processing and deep learning techniques. Our approach leverages Hilbert Transform-based signal decomposition for trend-cycle separation, followed by Temporal Convolutional Networks (TCN) for robust time series forecasting. The system incorporates user-defined investment preferences and dynamically ranks stocks based on forecasted trends, risk-return profiles, and sector-wise diversification. Stock data is sourced via the Alpha Vantage API to ensure real-time reliability. The entire system is deployed using Streamlit, providing an interactive and user-centric interface. Experimental validation demonstrates that the proposed system offers both accuracy in prediction and practical usability in real-world stock selection scenarios, surpassing traditional models in terms of flexibility and interpretability.  **Signature of the Supervisor** | | | | |