Stock Sentiment Analysis

1. Student Details

- Name: Harsh
- Roll Number: 023MCA110262
- Course: MCA
- University: Chandigarh University
- Mentor: Computer Science Co-ordinator

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2. Project Objective

The objective of this project is to develop a machine learning-based system that performs sentiment analysis on stock-related data such as news articles and tweets, and classifies them into positive, negative, or neutral categories. This helps in understanding market mood and supports data-driven investment decisions.

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3. Tools & Technologies Used

- Frontend: HTML, CSS, JavaScript
- Backend: Django
- Programming Language: Python 3.9+
- Libraries & Modules:
    - Django==3.2.5
    - NLTK>=3.6.4
    - Scikit-learn==1.0
    - TensorFlow==2.6.0
    - Pandas, NumPy, Joblib, Requests, OpenCV, Pillow, Twilio, etc.

- IDE: Visual Studio Code

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4. Project Description

This project utilizes NLP techniques and ML algorithms to analyze sentiments from textual stock data. It helps identify public opinion about stock performance using models trained on financial and social media content. The system uses preprocessing steps such as tokenization and TF-IDF, followed by model training and real-time predictions.

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5. SDLC Phases Followed

1. Planning – Defined goals, scope, and resource planning
2. Requirement Analysis – Identified functional and non-functional needs
3. Design – Created system architecture and UI wireframes
4. Implementation – Developed frontend, backend, and integrated the ML model
5. Testing – Performed unit, integration, and performance testing
6. Deployment & Maintenance – Final deployment and future enhancement planning

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6. Coding & Implementation

The implementation was done in Django for the backend, with HTML/CSS/JS for the frontend. The ML model was trained using sentiment-labeled datasets with preprocessing techniques and integrated via Python backend APIs.

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7. Testing Techniques

- Unit Testing for individual functions
- Integration Testing for frontend-backend interaction
- Model Evaluation using Accuracy, Precision, Recall
- Manual Testing for UI and usability

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8. Conclusion

The project successfully builds a working sentiment analysis tool for stock-related data. It offers a practical example of how AI can be used in financial decision-making and can be extended for real-time insights in future iterations.

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9. Applications

- Assisting investors in decision-making
- Analyzing public sentiment on stock movements
- Risk prediction for portfolio management
- Integration with financial dashboards

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10. Source Code & PPT Links

GitHub Repository:

https://github.com/Harshchoudhry/majorProject

- Project PPT:
  (Add your PPT Google Drive or GitHub link here)

11. Bibliography (APA Style)

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