IRTM Project Proposal

Project Title：Market Sentiment Analysis in Financial News and Stock Price Prediction

Group 20

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- **Brief description**：With the advancement of information technology, financial news has become more and more important in investment. We want to use some method to analyze financial news and try to predict stock price fluctuations. By leveraging natural language processing techniques, we can capture the sentiments within news content, quantifying these insights to support a stock price prediction model.
- **Possible solution**：
    1. **Data Collection**: Use web scraping to gather news data, focusing on stock-related articles.
    2. **Data Processing and Labeling**: Apply pre-trained natural language processing models, such as BERT, to analyze and extract sentiment scores from both news headlines and article content.
    3. **Model Selection**: Utilize different deep learning models like Random forest, SVM, LSTM, GRU, etc. to handle time-series data, and use Stacking and Boosting to Enhance our model performance, predicting short-term stock price changes following news releases.
    4. **Evaluation Metrics**: Assess model performance in stock price prediction using Mean Squared Error, Mean Absolute Error, R-square or accuracy as evaluation metrics.