Project Proposal

Person Number	Name	Contact	Division of work
030822-4864	Devarapalli,Naga Jyothi	nade22@student.bth.se	20%
020404-3541	Gujjula,Binathy	bigu22@student.bth.se	20%
020628-3988	Gondesi,Geethika	gego22@student.bth.se	20%
020604-8381	Medeshetty,Nikitha	nime22@student.bth.se	20%
011213-9589	Pithala,Nimisha	nipi22@student.bth.se	20%

Topic Chosen:

Case 1: Prediction of Cryptocurrency
Objective 1: Sentiment and Analysis in AI Prediction Models

1. Problem Description

1.1. Goal: To investigate the impact of popular social media tools using sentiment analysis in improving AI prediction models of cryptocurrency.

1.2. Choices of Criteria

1. **Risk or Uncertainty :** Criteria for risk or uncertainty can include things like success likelihood, potential dangers and their effects, and outcome uncertainty.
2. **Objectives or Goals :** Criteria associated with aims or goals help to evaluate alternatives according to their capacity to achieve these objectives or goals.
3. **Benefits or Gains :** Benefits criteria can include factors such as anticipated revenue, profit, customer satisfaction, or other positive outcomes.
4. **Stakeholder Preferences :** Stakeholder preference criteria can include factors such as values, stakeholder opinions, expectations, and needs.
5. **Stakeholder Analysis :** Stakeholder analysis criteria can include factors such as stakeholder interests, stakeholder satisfaction, and stakeholder engagement.
6. **Decision-maker preferences :** Decision-maker preference criteria can include factors such as subjective preferences, personal biases, and decision-maker values.
7. **Legal or Regulatory Compliance :** Legal or regulatory compliance criteria can include factors such as legal implications, regulatory compliance, and adherence to industry standards.

8. **Performance or Effectiveness :** Performance criteria can include factors such as efficiency, effectiveness, accuracy, and quality of outcomes.
9. **Change Management :** Change management criteria can include factors such as change readiness, change impact, and change complexity.
10. **Ethical and Moral Consideration :** Ethical or moral criteria can include factors such as ethical principles, moral values, and social responsibility.
11. **Cultural or Social Considerations :** This criterion involves evaluating potential solutions on the basis of cultural or social aspects, taking into account things like cultural norms, societal acceptance, and cultural sensitivity.
12. **Market or Competitive analysis :** This criterion involves evaluating alternatives with the help of market or competitive analysis, taking into account elements like market potential, competitiveness, and demand.
13. **User Experience or Usability :** User experience or usability criteria can include factors such as ease of use, user satisfaction, and user-friendliness.
14. **Flexibility or Adaptability :** Flexibility criteria can include factors such as scalability, modifiability, and adaptability to future changes.
15. **Data Quality or Reliability :** Data quality or reliability criteria can include factors such as data accuracy, data completeness, and data consistency.

2. General Architecture

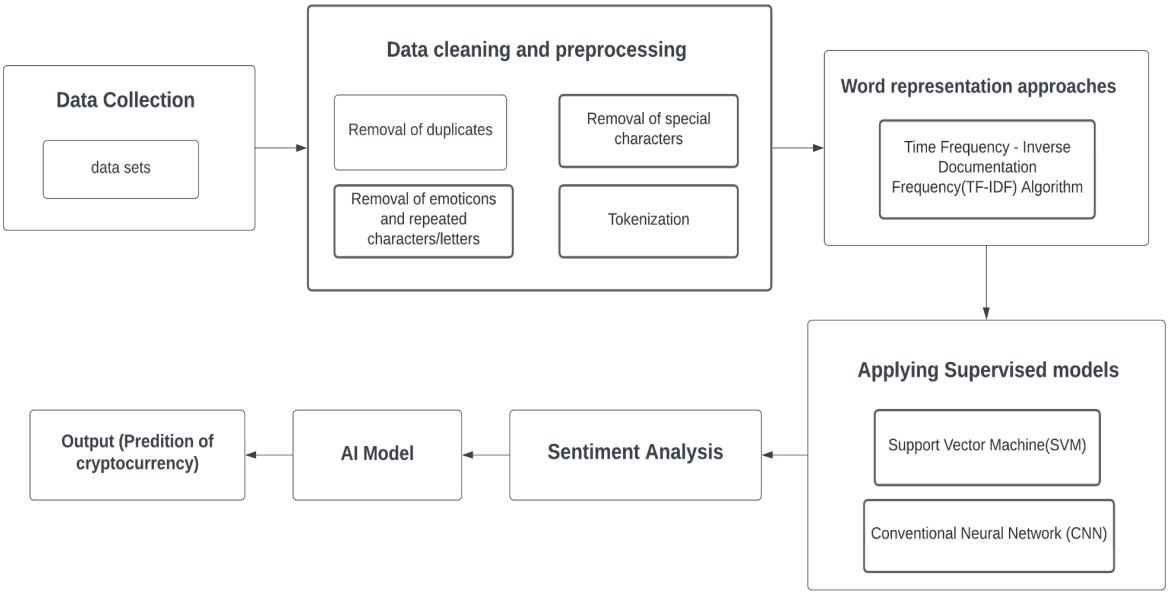

Figure 1: General Architecture of proposed DSS

2.1. Database Description

The database for the Intelligent Decision Support Systems consists of the following data:

1. Social media data: This is the data which is used to perform sentiment analysis. Dataset consists of data from social media platforms like Reddit and Twitter. This dataset is used for building the sentiment analysis model.
2. Feature extraction results: Data obtained after performing the feature extraction on the dataset is also stored in the database.
3. Training data: Data which is used to train the model after splitting the dataset is stored in the database.
4. Test data: The data used to test the trained model is also stored in the database.
5. Results of the Sentiment analysis: The data obtained after performing the sentimental analysis is also stored in the database.
6. Cryptocurrency data: Cryptocurrency data used by the AI prediction such as price of the cryptocurrency, volume, data from past etc.
7. Results of the AI prediction: Results of the AI prediction after performing the sentimental analysis is also stored to check the performance differences before and after the use of sentimental analysis.

All of the above data is stored in the form of tables in the database.

2.2. Model Description

1. Data Sources: A number of data sources are needed by the Decision Support System. We are taking into account popular social media sites like Reddit and Twitter, where people discuss cryptocurrencies.

2. Sentiment Analysis:Natural Language Processing is utilised during the sentiment analysis process to extract information from the text.The system analyses the information gathered from the data sources using sentiment analysis to determine whether the information is positive, negative or neutral.

3. AI prediction Model: Based on sentiment analysis and other criteria, AI models are used to forecast the price of cryptocurrencies in the future.These models were developed using a few machine learning methods such as Support vector machine,Convolution neural network.

4. User Interface: To interact with the system and view predictions from the AI model, user interface is required.The user interface includes graphs for sentiment analysis and historical pricing patterns.

3. Explanation of Implementation

3.1. Method

1. Initially, data is collected from kaggle by considering the social media platforms, Reddit and Twitter.
2. The data is then preprocessed to filter out any irrelevant text or inconsistencies. Only the required text is preserved.
3. A model is chosen to perform sentiment analysis. We're interested in considering Support Vector Machines (SVM) and Convolutional Neural Networks (CNNs). The model with a better accuracy is chosen.
4. The model is then trained with the preprocessed data. It will learn to classify the text into the desired category (positive, negative, neutral)
5. Later it is evaluated using accuracy, precision, recall and F1 score.
6. The designed model is used to predict the sentiment and analyse the value of Cryptocurrency.

3.2. Tools

1. Python programming language is used to develop the desired system.
2. Jupyter Notebook is used to develop the system.
3. The required data is collected from Kaggle.