Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	27 October 2023
Team ID	Team-592275
Project Name	Gilded Emotions: Unearthing Market Sentiments In Gold News
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Guidelines:

1. Include all the processes (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local / Cloud)
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

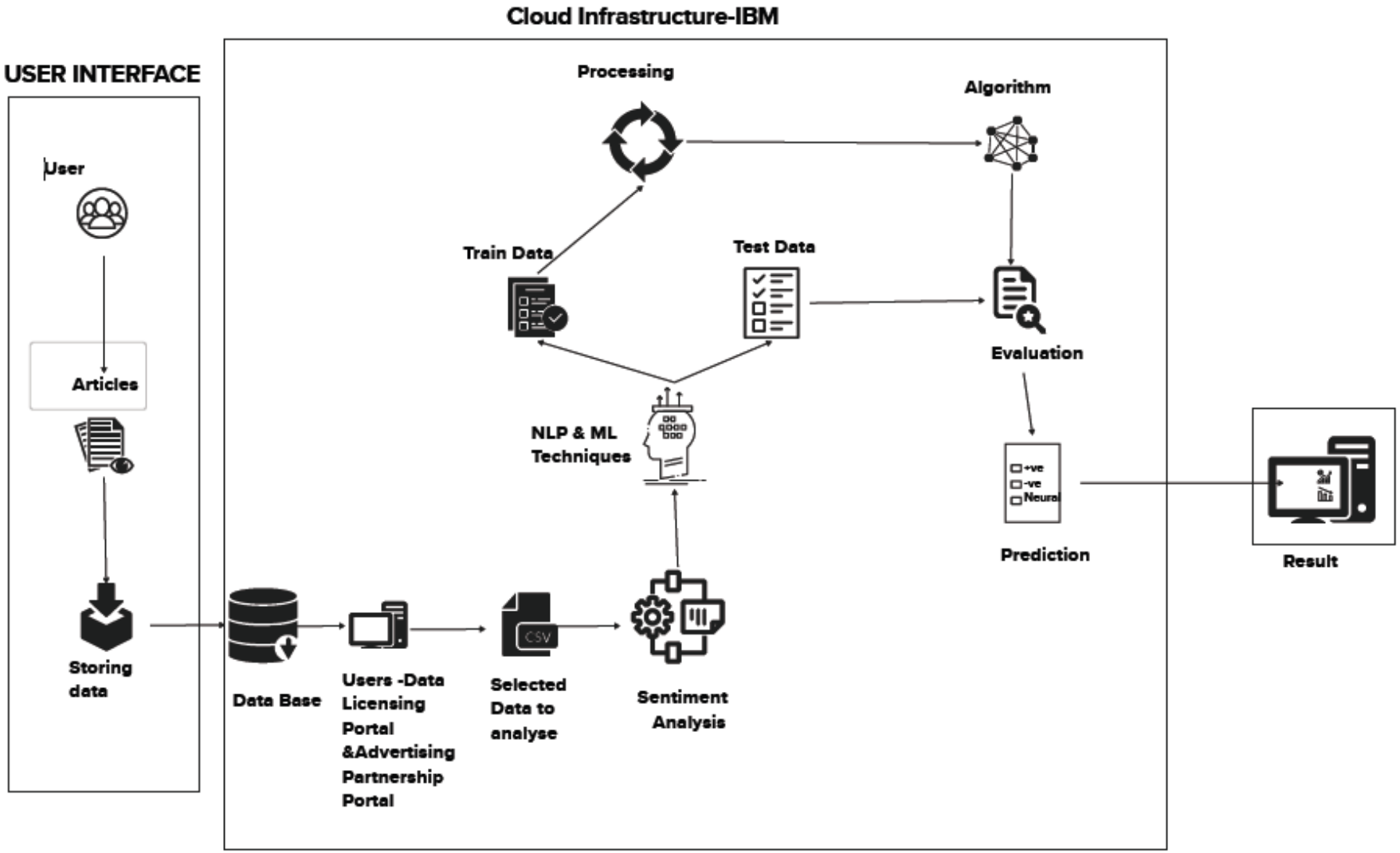
Cloud Infrastructure-IBM
USER INTERFACE
User
Articles
Storing data
Data Base
Users -Data Licensing Portal &Advertising Partnership Portal
Selected Data to analyse
CSV
Sentiment Analysis
NLP & ML Techniques
Train Data
Processing
Algorithm
Test Data
Evaluation
+ve
-ve
Neural
Prediction
Result

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	**User Interface**	Web-based interface for users to interact with the sentiment analysis tool.	Web development technologies (e.g., HTML, CSS, JavaScript) - Front-end frameworks (e.g., React, Angular, Vue.js)
2	**News Sources Interface**	Interface to external news sources for data collection	Custom API development for data retrieval
3	**Database**	Stores user profiles, historical sentiment data, and other information.	Relational Database Management System (RDBMS) (e.g., PostgreSQL, MySQL)
4	**File Storage**	Stores documents and articles for sentiment analysis	Cloud-based file storage (e.g., Amazon S3, Google Cloud Storage)
5	Model Training	Trains an ML model to predict the sentiment of gold news articles.	Cloud-based ML platforms, such as Amazon SageMaker, Google Cloud AI Platform, or Microsoft Azure Machine Learning.
6	Model Evaluation	Evaluates the trained ML model on a held-out test set to assess its performance.	Cloud-based ML platforms, such as Amazon SageMaker, Google Cloud AI Platform, or Microsoft Azure Machine Learning.
7	ML Model Interface	Allows the system to send gold news articles to the ML model to predict their sentiment, and to receive the predicted sentiment from the ML model.	Cloud-based ML platforms, such as Amazon SageMaker, Google Cloud AI Platform, or Microsoft Azure Machine Learning.

8	**Sentiment Analysis Component**	Core module for analyzing emotional tone of gold market news articles.	Natural Language Processing (NLP) techniques - Machine Learning (ML) algorithms
9	**Cloud Infrastructure**	Cloud-based infrastructure for hosting and scalability.	- Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Scalability	The system should be able to handle large volumes of gold news data and predict the sentiment of news articles in real time.	Cloud platform, such as AWS, Google Cloud Platform, or Microsoft Azure
2	Availability	The system should be highly available and provide continuous insights into the sentiment of the gold market.	Cloud platform, such as AWS, Google Cloud Platform, or Microsoft Azure.
3	**Data Security**	Ensuring the security of user data and sentiment analysis results.	Encryption protocols (e.g., HTTPS) Data access control and user authentication

4	Maintainability	The system should be easy to maintain and update	Cloud platform, such as AWS, Google Cloud Platform, or Microsoft Azure.
5	**Reliability**	The system should be reliable, minimizing downtime and errors.	Robust database management system (e.g., PostgreSQL, MySQL) Redundancy and failover mechanisms
6	**Customization**	The ability for users to customize their dashboard and preferences.	User profile management and customization features
7	**Data Licensing and Billing**	Managing data licensing and billing for financial institutions.	Subscription management software Payment gateway integration

References:

- **Cloud platform:**
  - Amazon Web Services (AWS): https://aws.amazon.com/
  - Google Cloud Platform: https://cloud.google.com/
  - Microsoft Azure: https://azure.microsoft.com/
- **ML platform:**
  - Amazon SageMaker: https://aws.amazon.com/sagemaker/
  - Google Cloud AI Platform: https://cloud.google.com/ai-platform/
  - Microsoft Azure Machine Learning: https://azure.microsoft.com/en-us/services/machine-learning/

- **NLP libraries:**
  - spaCy: https://spacy.io/
  - NLTK: https://www.nltk.org/
  - TextBlob: https://textblob.readthedocs.io/en/dev/

- **Web application:**
  - Django: https://www.djangoproject.com/
  - Flask: https://flask.palletsprojects.com/
- **API:**
  - FastAPI: https://fastapi.tiangolo.com/
  - Flask-RESTful: https://flask-restful.readthedocs.io/en/latest/
- **Programming language:**
  - Python: https://www.python.org/