**Project Overview:**

This project involves the development and integration of various components to create a comprehensive system for sentiment analysis and personalized user interactions. By leveraging advanced techniques such as LLMs, real-time sentiment analysis, personalized recommendations, dynamic profile management, and automated staff notifications, the system aims to enhance user satisfaction and operational efficiency

**Product Owner:**

Akash H N

**Team**

Akash H N

**Stakeholders:**

Hotel

Epic 1: Setting up of Virtual Environment and Collecting CRM dataset for sentiment analysis

User Story 1.1 - Task of setting up local environment

Acceptance Criteria: Installed Python and local virtual environment

Status: Completed

User Story 1.2 – Collecting mock CRM dataset

Acceptance Criteria: Collected CSV file of CRM data for sentiment analysis

Status: Completed

Epic 2: Implementation of sentiment analysis engine.

User Story 2.1 – Task of creating sentiment analysis engine using LLM

Acceptance Criteria:

The sentiment analysis engine correctly providing the sentiment of the feedback.

Status: Completed

Epic 3: Personalized recommendation system and Dynamic profile management system

User Story 3.1 – Task of creating personalized recommendation system

Acceptance criteria:

The system is providing recommendations for areas that have not been visited by the user.

Status: Completed.

User Story 3.2 – Task of profile management system

Acceptance criteria:

The system adds the user data if it does not exist in the database, and if the user data exists, it is updating the preferences.

Status: Completed

Epic 4: Staff notification system integrated with Slack & Email

User Story 4.1- Task of Integrating Staff Notification System with Slack & Emai

Acceptance Criteria:

1. The system sends notifications via Slack and email to staff members when negative feedback is received and provides recommendations to users.

Status: Completed

## **Sprint Plan**

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| --- | --- | --- | --- |
| **Sprint** | **Goal** | **Key Tasks** | **Deliverables** |
| Sprint 1 | Local env setup and data collection | Installing Python and local virtual environment and collecting crm data from open sources. | Data |
| Sprint 2 | Feedback Analyzer | Implementing LLM to provide sentiment for given text | Feedback analyzer |
| Sprint 3 | Develop recommendation engine and dynamic profile recommendation system | Developing a recommendation system that uses interaction data to generate personalized recommendations and establishing a connection to the database to access, store and manage user interaction data. | Recommendation engine module and profile management system |
| Sprint 4 | Add email and slack alerts | Integrate sentiment analysis and notification logic | Alerts |
|  |  |  |  |

## **Testing Plan**

**Unit Testing**:

Test each module separately and functions within:

* Sentiment Analysis
* Recommendations
* Profile Management
* Alert System

**Integration Testing**:

Test interactions between:

* LLMs and Sentiment Analysis
* Recommendations based on interaction data
* Profile Management and User Data
* Notifications in slack channel and email

**Performance Testing**:

1. **Sentiment Analyzer**:

Test if the sentiment analyzer can handle long feedback and generate appropriate suggestions for the areas mentioned in the feedback.

1. **Recommendation System**:

Test whether the recommendation system is functioning correctly for users with minimal interactions.

1. **Dynamic Profile Management**:

Test whether the dynamic profile management system updates data in real-time

1. **Notifications**:

Test if notifications are sent in real-time via both Slack and email and record the response time.

**User Testing**:

* User Interface:

Ensure that the user interface correctly receives inputs and provides the expected outputs.

* Recommendations:

Verify whether the provided recommendations are helpful and relevant for the users.

* User Interactions:

Ensure that user interactions are correctly recorded and maintained in the database.

## **Key Metrics**

* **Recommendation Accuracy**: Precision, Recall.
* **Sentiment Classification Accuracy**: F1 Score
* **Profile Update Latency**: Average time to update profiles.
* **Feedback Processing Time**: Time taken to analyze feedback and trigger alerts.