Assignment 5

Submitted by:
Aditya Srivastava (2201013)
Deepanika Gupta (2201062)
Kartik Saini (2201103)

1. Choice of User Interface (UI)

We have selected a Direct Manipulation Interface (DMI) for our project "Analytica". The system is implemented using a Graphical User Interface (GUI) built with HTML, CSS, and JavaScript, where each core functionality (Sentiment Analysis, Toxicity Detection, and Emotion Analysis) is provided on separate pages for better usability.

2. Justification for Choosing Direct Manipulation Interface with Separate Pages

A Direct Manipulation Interface (DMI) allows users to interact with UI elements directly rather than through commands or complex menus. Given the system's multi-functional nature, having separate pages for each analysis type improves usability and navigation.

2.1. Factors and Justification

Factor	**Justification**
Clear Separation of Features	Users can navigate between dedicated pages for Sentiment, Toxicity, and Emotion Analysis, avoiding confusion.
Better User Experience	A structured interface prevents overcrowding of UI components, ensuring clarity and ease of use.
Real-Time Interaction	Users get immediate feedback after submitting a query for analysis.
Data Visualization	Each page can include graphs, charts, and tables to display insights in a structured way.
Scalability and Maintainability	A modular UI structure allows for future expansion (e.g., adding more analysis features).
Efficient Navigation	Users can switch between pages using a navigation bar with clear labels for each type of analysis.
Modern Web Standards	Using HTML, CSS, and JavaScript ensures cross-platform compatibility and responsiveness.

Table 1: Justification for Choosing DMI with Separate Pages

3. Comparison with Other UI Choices

A comparison of different UI types and the reasons for not selecting them is provided in Table 2.

UI Type	**Reason for Not Choosing**
Command-Line Interface (CLI)	Not user-friendly, requires technical knowledge, lacks visual representation.
Menu-Based Interface	Restrictive, requires too many clicks to navigate through features.
Single-Page Interface (No Separate Pages)	Would lead to cluttered UI, making it difficult to focus on specific analyses.

Table 2: Comparison with Other UI Choices

4. Proposed UI Structure

The proposed UI structure is detailed in Table 3.

Page	**Purpose**
Home Page	Displays an introduction to the tool with navigation options.
Sentiment Analysis Page	Allows users to enter text or a Twitter handle and view positive, negative, or neutral sentiment classification.
Toxicity Detection Page	Detects harmful or offensive content in tweets.
Emotion Analysis Page	Identifies emotions like joy, sadness, anger, surprise, etc. in tweets.
Leaderboard Page	Displays a ranked list of users based on analysis interactions.
Admin Panel	Enables tweet fetcher's credentials management.

Table 3: Proposed UI Structure

5. Navigation Workflow (User Interaction Flow)

The system workflow follows the steps listed below:

1. User lands on the homepage and sees navigation links for different analyses.
2. Clicks on **Sentiment Analysis**, enters a hashtag, username, or custom text, and sees the sentiment classification results.
3. Switches to the **Toxicity Detection** page, enters a query, and receives toxicity scores.
4. Navigates to the **Emotion Analysis** page, submits a query, and views emotion detection results.
5. Checks the **Leaderboard Page** to see top-ranked users based on analysis trends.
6. Admin logs into the **Admin Panel** to update tweet fetcher credentials.