Department of Computer Science And Engineering

CIBUS- An Intelligent Assistant for Mood-based Food Recommendations

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PROBLEM STATEMENT

- 🔍 Existing chatbots are function-specific (weather, news, or Q&A) and lack emotional intelligence.

- 💬 Users don't receive personalized responses based on their current mood.

- 🌐 There's a lack of integration between real-time APIs (weather, news, food) and sentiment analysis.

- 🍽️ No existing system provides emotion-driven food recommendations or links to context-aware content like YouTube reviews.

ABSTRACT

This project develops a conversational chatbot integrated with machine learning to predict user moods and provide personalized food recommendations. Using sentiment analysis, the system detects emotional states from conversations and suggests suitable food items along with YouTube review links. It also integrates weather, news, and Wikipedia APIs to enhance interaction. Built with Python for backend and HTML + Tailwind CSS for frontend, the chatbot ensures a seamless user experience. Future enhancements include improving mood detection, expanding food databases, and adding more APIs.

INTRODUCTION AND OVERVIEW

This project explores the integration of machine learning with a chatbot interface to provide an innovative, mood-driven food recommendation system. By analyzing user sentiments in real-time conversations, the chatbot predicts emotional states and suggests personalized food items accordingly. The system is enhanced with external APIs such as Weather, News, and Wikipedia, making interactions more dynamic and context-aware. A unique feature is the inclusion of YouTube review links for recommended dishes, improving user engagement and decision-making.

Developed using a Python backend and a clean HTML/Tailwind CSS frontend, the application emphasizes both functionality and user experience. The goal is to bridge emotional intelligence and recommendation systems to create a more interactive, intelligent assistant.

EXISTING SYSTEM

In the current technological landscape, several chatbot applications exist that offer weather updates, news headlines, or general knowledge responses individually. These systems are typically focused on one specific functionality and lack emotional intelligence. For example, weather bots can fetch forecast data, and news bots can deliver headlines, but they do not analyze the emotional state of the user. Some advanced AI chatbots, like virtual assistants (e.g., Siri, Alexa), can handle a variety of queries, but they generally lack deep sentiment analysis and personalized recommendations based on mood. Furthermore, most existing systems do not combine real-time data retrieval with sentiment-driven suggestions, such as recommending food based on the user's mood or providing relevant YouTube content. The lack of integration between informative responses and emotionally aware interaction limits the user experience in current systems.

DRAWBACKS OF EXISTING SYSTEM

- 🎰 Single-purpose bots (e.g., weather, news) focus on one function and lack emotional intelligence.
- 🤖 Virtual assistants like Siri or Alexa handle general queries but offer limited sentiment analysis.
- 🧠 Most systems don't analyze user moods or provide personalized recommendations based on emotion.
- 🔗 Lack of integration between real-time data (weather, news) and emotion-driven suggestions.
- 🍽️ No existing system combines mood detection, food suggestions, and YouTube reviews in one platform.
- 🚫 Overall, limited emotional engagement and disconnected features reduce the user experience.

PROPOSED SYSTEM

Chatbot Interaction & Sentiment Analysis:

    Chatbot detects user mood using sentiment analysis.

Personalized Food Recommendaions:

    Food suggestions based on emotional state and preferences.

Integrated APIs:

    Weather, News, Wikipedia APIs for real-time updates and context.

YouTube Review Links:

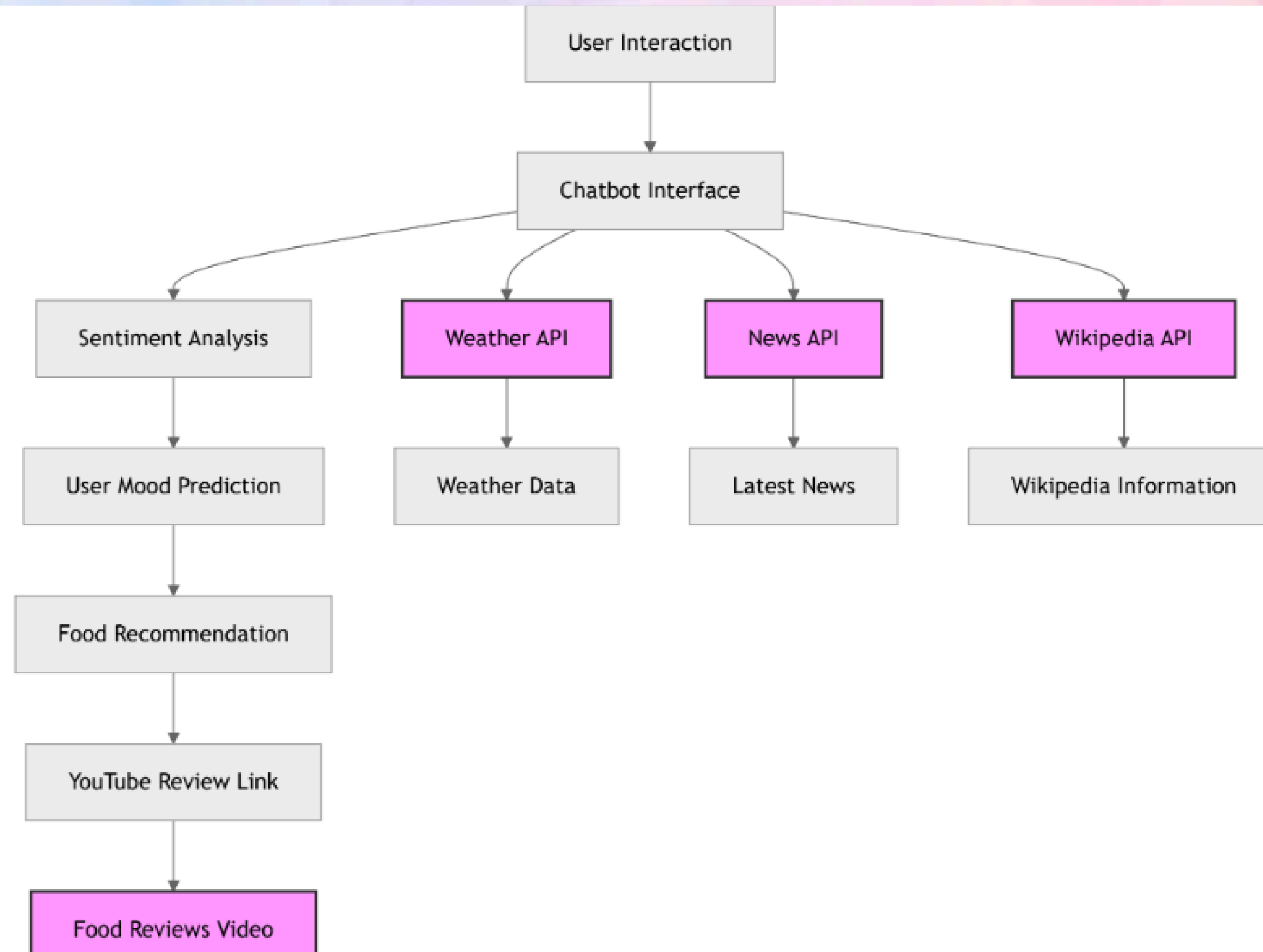   Provides YouTube links for food reviews.

Frontend & Backend:

    HTML & Tailwind CSS for frontend.

    Python for backend and mood detection.

Future Enhancements:

    Improve mood detection and expand food database.

SYSTEM ARCHITECTURE

ARCHITECTURE VERVIEW

The architecture of the proposed system integrates multiple components to deliver a seamless, interactive, and personalized user experience. The user interacts with a chatbot interface, which serves as the central point of communication. Upon receiving input, the chatbot communicates with external APIs such as the Weather API, News API, and Wikipedia API to fetch real-time data like weather updates, current events, and encyclopedic information. Simultaneously, sentiment analysis is applied to the user's responses to detect their emotional state. Based on this sentiment, the system predicts the user's mood and suggests a suitable food item, along with a relevant YouTube review link. This integrated approach ensures smooth coordination between data retrieval, emotional analysis, and personalized recommendations.

DATA PREPROCESSING

Step 1: Data Collection

Gather data from user interactions, Weather API, News API, and Wikipedia API.

Step 2: Sentiment Analysis

Analyze the sentiment of user inputs using Natural Language Processing (NLP) techniques.

Step 3: Feature Engineering

Extract relevant features such as user mood, preferences, and external data (weather, news).
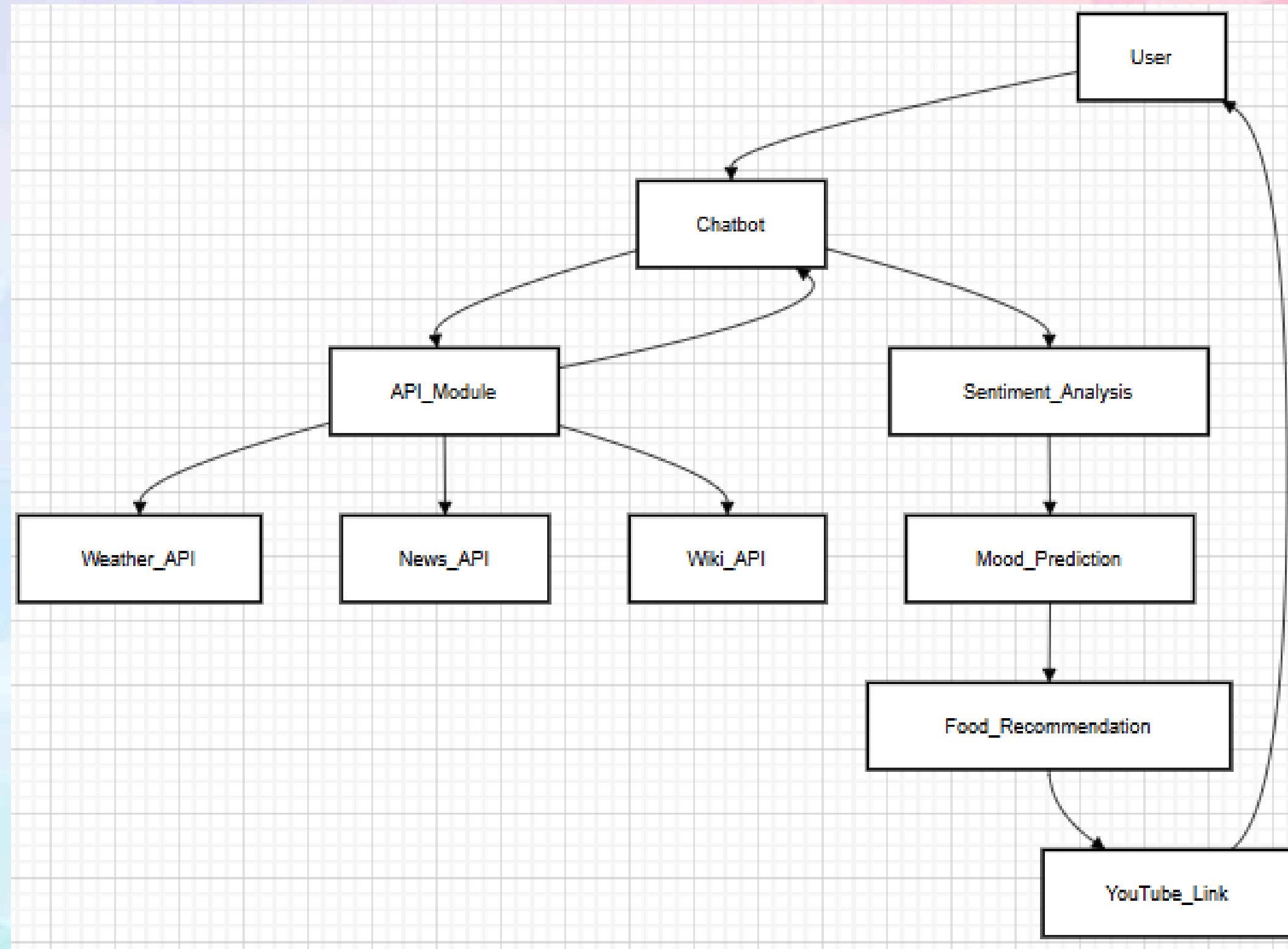
Step 4: Data Transformation

Convert text and other features into numerical values suitable for machine learning models.

Step 5 : Data Validation

Ensure the data is accurate and formatted correctly for training and predictions.

DATA FLOW DIAGRAM

WORK FLOW OVERVIEW

User Interaction:

The user interacts with the chatbot to ask questions or request information.

Fetching Real-Time Data

The chatbot fetches data from external APIs:

Weather API: Provides current weather updates.

News API: Gives the latest news.

Wikipedia API: Retrieves relevant information

Sentiment Analysis

The system analyzes the user's responses to determine their mood (happy, sad, etc.).

WORK FLOW OVERVIEW

Mood-Based Food Recommendation
Based on the detected mood, the system recommends a food item suited to the user's emotional state.

YouTube Review Link
A YouTube review link for the recommended food is provided for further exploration.

Integration of All Components
All parts (chatbot, APIs, sentiment analysis, recommendations) work together to provide a personalized experience

COMPARISON AND ANALYSIS

System Evaluation

This section evaluates how well the chatbot integrates with APIs (Weather, News, Wikipedia), performs sentiment analysis, and suggests food recommendations based on the user's mood.

2. Feature Comparison

A comparison of the core features, including data retrieval speed from external APIs, accuracy of sentiment analysis, and the relevance of food recommendations based on the user's emotional state.

3. Mood Detection Analysis

An analysis of the sentiment analysis feature, focusing on how accurately the system detects the user's mood and how this affects the food recommendations provided.

WORK FLOW OVERVIEW

API Performance

Comparison of the API's performance (Weather, News, Wikipedia) in terms of response time and data accuracy during user interactions with the chatbot.

Recommendation Accuracy

An analysis of how well the system recommends food items based on the user's mood detected through sentiment analysis and the relevance of YouTube review links provided.

CONCLUSION

The proposed chatbot system effectively integrates multiple external APIs, sentiment analysis, and mood-based food recommendations to provide a personalized and engaging user experience. By combining real-time data and emotional insights, the system delivers timely, relevant information and suggestions, enhancing user interaction. This project showcases the potential of AI and natural language processing in creating dynamic, user-centered applications.

THANK YOU