Requirement Analysis Phase-II
Technology Stack (Architecture & Stack)

Date	10-02-2026
Team ID	LTVIP2026TMIDS65437
Project Name	Flavour Fusion: -Ai-Driven Recipe Blogging
Maximum Marks	5 Marks

Technical Architecture:

The technology architecture for an AI-driven recipe blogging platform, such as "Flavour Fusion," focuses on bridging visual food recognition with automated text generation to create and publish unique, personalized recipes. A modern, robust architecture for this purpose typically utilizes a hybrid AI approach combined with web technologies, a database, and an API-driven frontend.

1. Core AI Engine Architecture

- Image Preprocessing & Analysis (CNN)
- Feature Extraction & Classification
- Recipe Generation (RNN/LSTM)
- Fusion Algorithm

2.Backend & Data Infrastructure

- Machine Learning Frameworks
- Backend Services
- Database
- API Layer

3. Frontend & User Experience (UX)

- **Interface**
- **Content Display**
- **Community Features**

Table-1: Components & Technologies:

S. NO	Components	Description	Technologies
1	• **AI Recipe Generator/Engine:** The core software, often utilizing Large Language Models (LLMs) like GPT-4, that generates unique, fusion-style recipes.	• **Image-to-Recipe Generation:** Users capture or upload an image of food. The AI identifies the dish, breaks it down, and creates a step-by-step recipe with 98% accuracy.	**Machine Learning (ML) & Deep Learning (DL)** • Convolutional Neural Networks (CNNs) • Recurrent Neural Networks (RNNs) & LSTMs • Transformers (e.g., GPT-4/T5)
2	• **Flavour Pairing Database:** A database (e.g., FlavourDB, FooDB) containing molecular structures, aroma compounds, and cultural flavor profiles (e.g., matching Japanese miso with Mexican tacos).	• **Dynamic Fusion Algorithm:** The system takes inputs from two or more cuisines and blends their techniques and components to create a unique dish.	• **Graph Databases:** Used to store and process the "flavor network," representing ingredients as nodes and chemical correlations as edges, allowing the AI to predict how ingredients will pair.

3	• **Trend Analyzer:** Tools that pull real-time data from TikTok, Instagram, and blogs to identify trending ingredients (e.g., matcha, ube, yuzu) and incorporate them into new recipes.	• **AI-Powered "Pantry Challenge":** Users list what they have in their fridge, and the AI generates a coherent, creative recipe to minimize food waste.	• **Natural Language Processing (NLP):** Processes user input, such as dietary preferences or available ingredients, to ensure the recipe is tailored.
4	• **AI Recipe Generator/Engine:** The core software, often utilizing Large Language Models (LLMs) like GPT-4, that generates unique.	• **Content Optimization:** AI suggests catchy, SEO-friendly titles and writes engaging blog content to accompany the recipe.	• **Natural Language Processing (NLP):** Processes user input, such as dietary preferences or available ingredients, to ensure the recipe is tailored.
5	• **Multimodal Analysis Input:** Systems that allow users to upload images of available ingredients or finished dishes, which the AI analyze.	• **Predictive Sensory Analytics:** Platforms like Gastrograph AI simulate consumer taste perception, predicting if a new fusion flavour will be accepted.	• **Predictive Sensory Analytics:** Maps human taste perception to predict consumer acceptance, often used to predict how new

2. Application Characteristics:

- **Novelty and Unconventionality:** AI identifies non-obvious, latent connections between flavor compounds, resulting in creative fusions that cross-cultural barriers, such as combining miso (Japanese) with tacos (Mexican).
- **Personalization & Dietary Customization:** Algorithms tailor recipes to specific dietary needs (vegan, keto, gluten-free) and user taste preferences.
- **Data-Driven Trend Integration:** AI models analyze social media trends, restaurant menus, and consumer reviews to ensure the fusion recipes are current and appealing to modern consumers.
- **Rapid Iteration:** AI reduces the time required to move from concept to recipe, allowing for faster experimentation compared to traditional, trial-and-error cooking.
- **Scientific Grounding:** Pairings are often based on the chemical composition of ingredients, ensuring that while the combination is new, it is likely to be delicious.