

## Phase Development Phase

### Model Selection & Architecture Design

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

### 1. Selected model (Gemini Pro / Flash / Vertex AI)

#### 1. Vertex AI (The Platform)

- Vertex AI is the platform for building and managing these AI applications.
- Key features for blogging:
  - Vertex AI Studio
  - Controlled Generation
  - Context Caching

#### 2. Gemini Pro (1.5 Pro or 2.5 Pro)

- For flavor fusion, Gemini Pro excels in reasoning and complex logic. When creating fusion recipes, such as combining Thai flavors with Italian techniques, Pro provides sophisticated, accurate, and creative combinations. This reduces the need for manual troubleshooting.
- Use cases include generating full blog posts with storytelling, creating complex, multi-step fusion recipes, and ensuring high-quality, creative content.

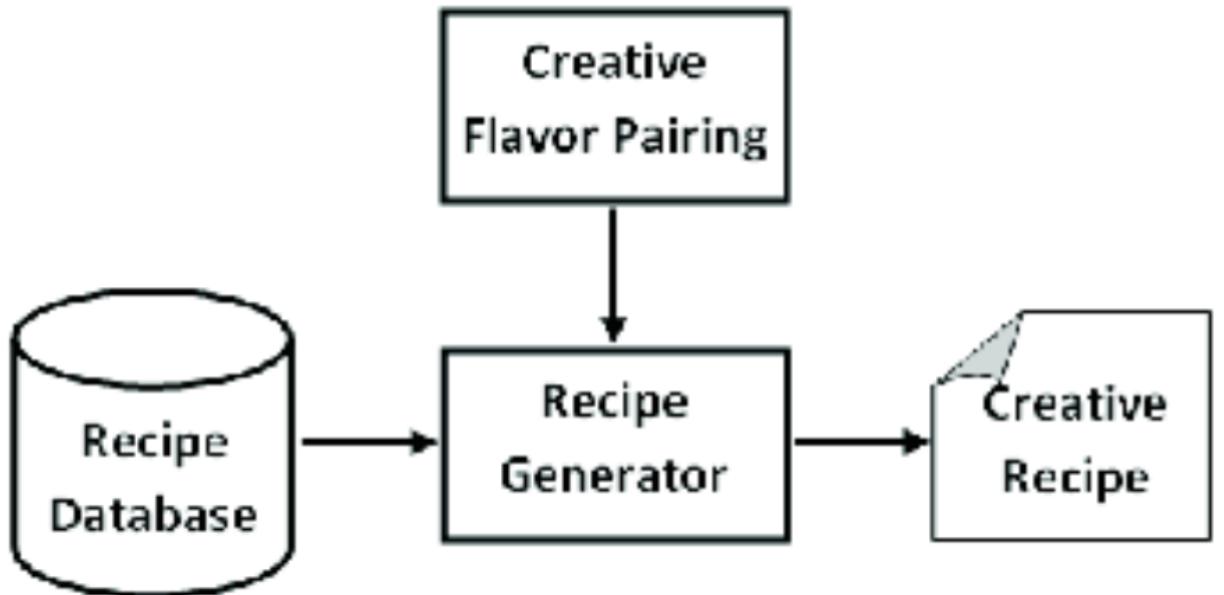
#### 3. Gemini Flash (1.5 Flash or 2.5 Flash)

- Best for high-volume content creation, rapid prototyping, and real-time interactive blogging (e.g., "ask the AI" features).
- For flavor fusion, Gemini Flash is optimized for low latency and cost efficiency, costing less than Pro. It is ideal for generating many recipes daily or building a rapid.

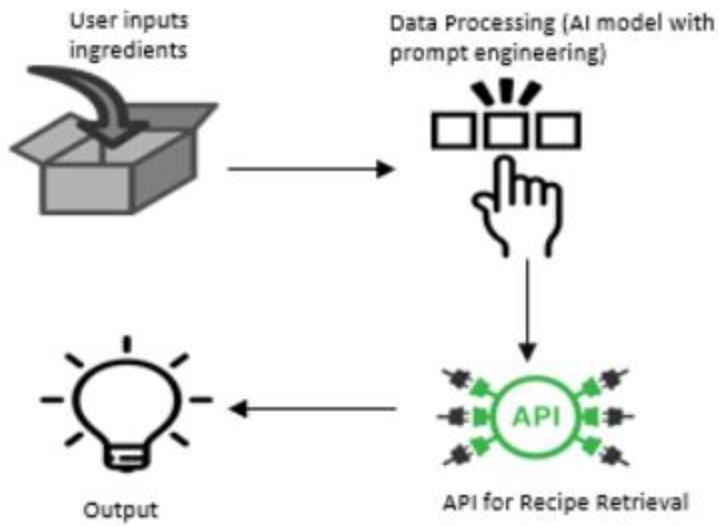
## 2. Reason for model selection:

Task	Recommended Model	Reason for Selection
Image Recognition	CNN (Convolutional Neural Network)	High accuracy in identifying food ingredients/dishes
Recipe Generation	RNN (Recurrent Neural Network)	Effective at producing sequential, step-by-step instructions
Flavor Pairings	Graph Networks (e.g., FlavorGraph)	Predicts innovative pairings based on molecular data
Personalization	Hybrid Filtering (Collaborative + Content)	Tailor's recipes to user taste/dietary needs

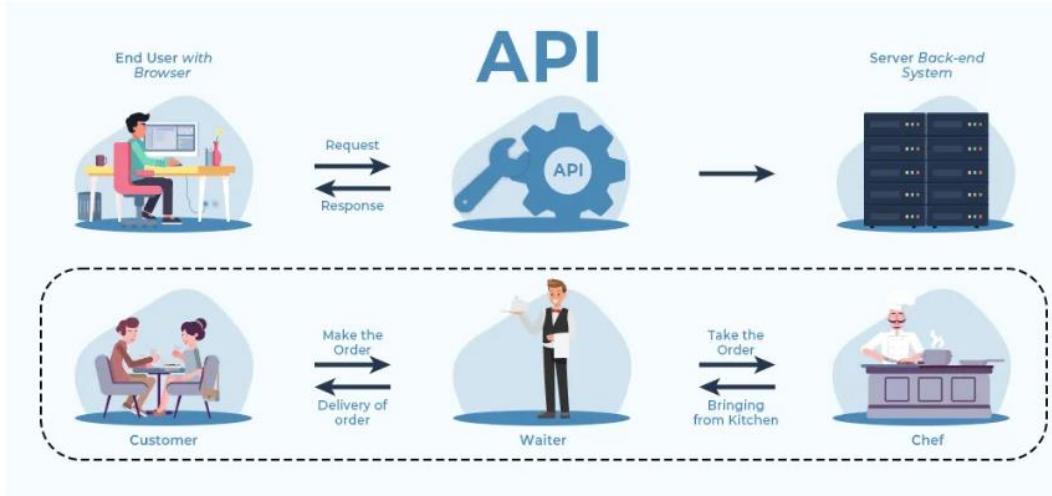
## 3. System architecture diagram:



## 4. Workflow design (User → Prompt → Model → Output):



## 5.API integration architecture:



## 6.Token/context handling:

Token and context handling in AI-driven recipe blogging—particularly for complex "flavour fusion" applications—refers to how large language models (LLMs) manage, interpret, and generate text within specific memory limits. Effective handling ensures the AI remembers that it is fusing Thai and Italian flavors, for example, rather than just producing two separate, disjointed recipes.



## 7. Libraries & tools used:

AI-driven recipe blogging and flavor fusion leverage advanced machine learning (ML), natural language processing (NLP), and computer vision (CV) to analyze thousands of flavor compounds and ingredient pairings to create new, innovative recipes.

1. AI-Driven Flavor Fusion & Food Science Tools
2. Machine Learning Libraries (Python-Based)
3. AI-Driven Recipe Generation Tools (Blogging/Content Creation).
4. Computer Vision (CV) Tools for Recipe Generation

## 8. Scalability considerations:

Scalability in AI-driven recipe blogging—particularly for "flavour fusion," which involves creative, non-traditional ingredient combinations—requires balancing high-speed AI generation with culinary logic, user experience, and technical infrastructure.

Area	Scalability Solution
Response Time	Parallel processing, Lazy loading for nutrition data
Recipe Quality	Advanced prompt engineering, Post-processing scripts
Flavor Pairing	Leveraging FlavorGraphs and chemical data
System Load	Cloud-native architecture, Auto-scaling databases