Project Development Phase

Testing & Evaluation

Date	10-02-2026
Team ID	LTVIP2026TMIDS65437
Project Name	Flavour Fusion: -Ai-Driven Recipe Blogging
Maximum Mark	3 Marks

1. Functional testing:

Functional testing for an AI-driven recipe blogging platform like "Flavour Fusion" ensures that every feature—from ingredient recognition to automated recipe creation—works according to user requirements. Because this application uses AI (CNN/RNN models), the testing must cover both standard web functionality and the accuracy of the AI model.

1. Neat Diagram: Flavour Fusion Functional Testing Workflow

```
graph TD
    A[User/Chef] -->|1. Upload Food Image/Input Ingredients| B(Frontend Interface);
    B -->|2. Request Recipe Generation| C{AI Backend Core};
    C -->|3a. Analyze Ingredients| D[Recipe Generation Model - NLP/RNN];
    C -->|3b. Classify Food Image| E[Image Analysis Model - CNN];
    D -->|4. Generate Recipe Details| F[Output: Recipe, Times, Steps];
    E -->|4. Generate Recipe Details| F;
    F -->|5. Validation & Filtering| G{Testing & Validation};
    G -->|6a. Passes| H[Display Recipe to User];
    G -->|6b. Fails| I[Log Error & Refine Model];

    subgraph "Functional Test Cases (QA)"
    J[Image Upload Accuracy]
    K[Ingredient Recognition]
    L[Recipe Quality Check]
    M[Dietary/Allergy Filters]
    N[Serving Size Adjustment]
    G -.-> J
```

G -.-> K

G -.-> L

G -.-> M

G -.-> N

2. AI output validation:

AI-driven recipe blogging—often called "Flavour Fusion" or AI recipe generation—uses Machine Learning (ML) to create, modify, and pair ingredients for new culinary creations. Because AI cannot taste or smell, **output validation** is the crucial process of ensuring generated recipes are coherent, safe, and delicious before being published on a blog.

The Role of Validation in AI Recipe Generation

An models, such as LLMs (Language Models) and CNNs (Convolutional Neural Networks), can hallucinate or create impractical combinations (e.g., "soy sauce in a vanilla cake"). Validation filters these outputs.

- **Safety Check:** Ensures cooking temperatures and times are realistic and not dangerous.
- **Flavor Harmony:** Verifies that ingredients, such as spices and proteins, actually complement each other.
- **Structural Integrity:** Checks that the steps are logical (e.g., "whisk" before "bake").

3. Edge case testing:

What is Edge Case Testing in Flavour Fusion?

It is a quality assurance methodology that focuses on validation at the boundaries of the AI model's training data. For AI-driven recipe generation (using CNNs for image classification and RNNs for text generation), this ensures the system doesn’t generate toxic or nonsensical recipes, crash, or provide dangerous dietary advice.

- Image Input Anomalies:
- Ingredient/Flavor Fusion Extremes:
- User Input/System Constraints

4. Performance testing (latency):

Performance testing for "Flavour Fusion" (an AI-driven recipe blogging platform) ensures that AI-generated content—such as recipes created from uploaded food images or text prompts—is

delivered to users instantly, even under high traffic. Latency, the core focus, measures the delay between a user submitting an image and receiving the finished recipe.

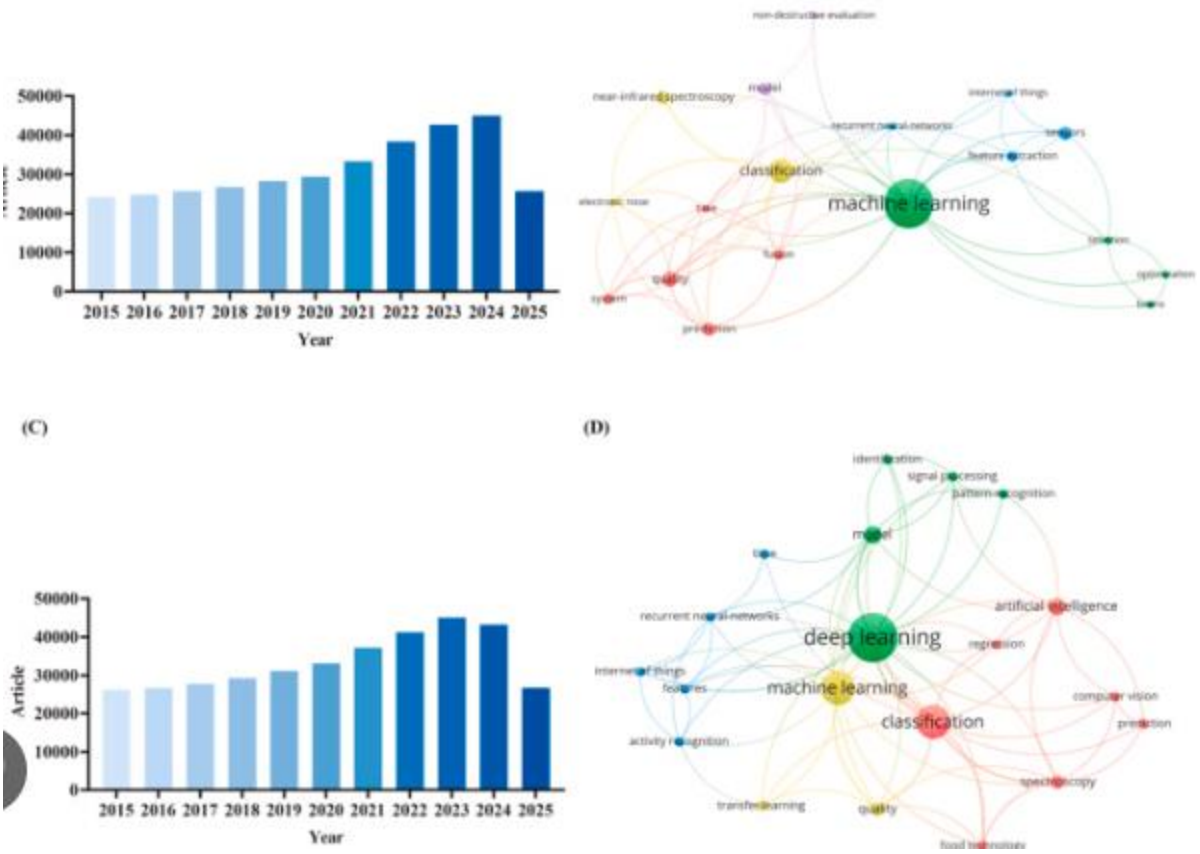
How to Test & Reduce Latency

- **Load Testing (Locust/k6):** Simulate 1000s of users uploading photos simultaneously to check if the AI engine stalls.
- **Caching Results:** Store recipes for popular images (e.g., "biryani") in a cache. If a user uploads an image similar to one already processed, serve it instantly from memory instead of re-running the AI.
- **Optimize Models:** Use lighter, more efficient image recognition models (CNNs) and faster language models (LLMs) to speed up generation.
- **Streaming Responses:** Display the recipe text token-by-token as it is generated, rather than waiting for the entire recipe to finish, reducing *perceived* latency.

5. Output quality evaluation:

Output quality evaluation for "Flavour Fusion"—an AI-driven recipe blogging concept that generates, pairs, and presents novel flavor combinations—requires a multi-faceted approach. It must blend technical metrics (AI accuracy) with culinary sensory evaluation (taste and feasibility).

The goal is to ensure the AI createsrecipes that are not just "novel" but also "delicious," "structurally sound," and "culturally respectful".



6. User testing & feedback:

User testing and feedback are critical for **Flavour Fusion**, an AI-driven recipe platform that generates, suggests, and adapts culinary content based on user inputs (ingredients, dietary restrictions, images).

Because AI can sometimes produce inaccurate or unappealing combinations (e.g., earthy tastes or gritty textures), human-guided feedback is essential to train the model to produce better, more personalized, and reliable recipes.

7. Bug fixing:

Bug fixing for "Flavour Fusion"—a hypothetical or specialized AI-driven recipe blogging platform (utilizing CNNs for image analysis and RNNs/LLMs for text generation)—involves addressing unique challenges where AI hallucinates, misidentifies, or generates unsafe/incorrect recipes.

The goal is to move from "slop" (incorrect, generated content) to high-quality, actionable, and safe recipes.

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8. Evaluation metrics:

Evaluation metrics for "flavour fusion" in AI-driven recipe blogging are designed to ensure that computer-generated culinary combinations are not only novel and creative but also palatable, logical, and practical for home cooks.

AI-driven recipe blogging involves using LLMs (like GPT-4) or specialized neural networks to suggest new ingredient pairings, create recipes based on images, or automate food blog content.