**Hackathon Project Phases Template**

## **Project Title:**

flavour fusion-ai driven receipe blogging

## **Team Name:**

Bits-byte

## **Team Members:**

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## **Phase-1: Brainstorming & Ideation**

### **Objective:**

The objective of Flavour Fusion is to create an **AI-powered recipe blogging platform** that generates and curates **unique fusion recipes** by blending flavors from different cuisines. It aims to provide **personalized, engaging, and interactive culinary experiences** for food enthusiasts through AI-driven content creation, ingredient pairing, and smart recommendations.

### **Key Points:**

Problem Statement:

### **Challenges in the Current Food Blogging & Recipe Discovery Space:**

1. **Lack of Personalized Recipe Suggestions**
   * Most recipe websites provide static content without **customization** based on user preferences, dietary restrictions, or available ingredients.
2. **Difficulty in Discovering Fusion Recipes**
   * Users struggle to find **creative, well-balanced fusion dishes** that combine different cuisines in a harmonious way.
3. **Time-Consuming Recipe Writing & Blogging**
   * Food bloggers and chefs spend significant time writing **engaging content, structuring recipes, and optimizing for SEO**.
4. **Limited Visual & Interactive Cooking Assistance**
   * Many platforms lack **AI-generated food images** and **interactive plating suggestions** to enhance the cooking experience.

**Proposed Solution:**

Flavour Fusion leverages **Artificial Intelligence (AI) and Machine Learning (ML)** to automate and enhance the recipe discovery and blogging experience. The platform provides:

✅ **AI-Generated Fusion Recipes** – AI creates unique **fusion dishes** based on global cuisine pairings.  
✅ **Personalized Recipe Suggestions** – Users get **customized meal plans** based on dietary preferences, available ingredients, and taste preferences.  
✅ **Automated Blog Writing** – AI generates **SEO-optimized** food blogs with storytelling, cultural history, and detailed cooking instructions.  
✅ **AI-Generated Food Images** – Uses **DALL·E or similar tools** to create **realistic food images** for recipes.  
✅ **Augmented Reality (AR) for Plating** – Users can visualize food presentation styles before plating their dish.  
✅ **Community & Social Integration** – Users can **rate, tweak, and share AI-enhanced recipes** while interacting with fellow food lovers.

1. **Target Users:**
2.  **Home Cooks & Food Enthusiasts** – People who enjoy cooking and want to discover **new fusion recipes**.
3.  **Professional Chefs & Culinary Experts** – Looking for **creative inspiration** and unique **ingredient pairings**.
4.  **Food Bloggers & Content Creators** – Need an **AI-powered assistant** for recipe writing and SEO optimization.
5.  **People with Dietary Restrictions** – Seeking **customized meal plans** based on their **allergies, preferences, or health goals**.
6.  **Tech-Savvy Millennials & Gen Z** – Interested in **interactive cooking experiences** (AR plating, AI recommendations).

**Expected Outcome:  
Efficient Recipe Discovery** – AI makes it easier to find **new, unique fusion recipes** tailored to individual preferences.  
🔹 **Automated Blogging & Content Creation** – Saves **food bloggers time** by generating **SEO-optimized** blog posts.  
🔹 **Enhanced User Engagement** – Interactive features like **personalized recommendations, AR plating, and community-driven tweaks** keep users engaged.

## **Requirement Analysis**

### **Objective:**

Define the technical and functional requirements for the flavour fusion-ai driven receipe blogging

### **Key Points:**

1. **Technical Requirements:**Programming Language: **Python**
   * Backend: **Python(flask),openai API**
   * Frontend: **html,css,javascript**
2. **Functional Requirements:**

* **AI Recipe Generation** – Users input ingredients, AI suggests recipes.
* **User-Friendly UI** – Interactive interface with smooth animations.
* **Recipe Blog Posting** – Save & share AI-generated recipes.
* **Search & Filter** – Find recipes by ingredients, cuisine, or difficulty.
* **Backend API Handling** – Secure & efficient communication between frontend and AI model.

1. **Constraints & Challenges:**

 **API Limitations** – OpenAI has request limits; caching may be needed.

 **Performance Issues** – Optimize API calls to avoid slow responses.

 **Security Risks** – Protect API keys and user data.

 **Cross-Origin Issues** – Enable CORS for seamless frontend-backend interaction.

 **Deployment Challenges** – Ensure proper setup on Vercel (frontend) & Render (backend).

## **Phase-3: Project Design**

### **Objective:**

Develop the architecture and user flow of the application.

### **Key Points:**

**1.System Architecture:**

 **Frontend (React.js, Tailwind CSS)** → User interface & interactions

 **Backend (Flask/FastAPI, OpenAI API)** → Processes requests & generates recipes

 **AI Model (GPT-3.5/GPT-4)** → Generates recipes

 **Deployment** → Frontend (VS Code), Backend (Chrome Browser)

**2.User Flow:**

1️⃣ User enters ingredients →

2️⃣ Clicks "Generate Recipe" →

3️⃣ Backend calls AI model →

4️⃣ Recipe is displayed →

5️⃣ (Optional) Save/Share.

**3.UI/UX Considerations:**

✔ Simple & responsive design  
✔ Smooth animations (Framer Motion)  
✔ Instant feedback while loading

**Phase-4: Project Planning (Agile Methodologies)**

**Sprint Planning with Priorities:**

| **Sprint** | **Task** | **Priority** | **Duration** | **Deadline** | **Assigned To** | **Dependencies** | **Expected Outcome** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sprint 1** | **Environment Setup & API Integration** | **🔴 High** | **6 hours (Day 1)** | **End of Day 1** | **RajaHarshini**  **&**  **Tejaswini** | **OpenAI API Key, Python, Flask setup** | **API connection established & working** |
| **Sprint 1** | **Frontend UI Development** | **🟡 Medium** | **3 hours (Day 1)** | **End of Day 1** | **RajaHarshini**  **&**  **Tejaswini** | **API response format finalized** | **Basic UI with input fields** |
| **Sprint 2** | **Recipe Generation & AI Model Integration** | **🔴 High** | **4 hours (Day 2)** | **Mid-Day 2** | **Nandini**  **&**  **Akshara** | **API response, UI elements ready** | **AI generates fusion recipes based on ingredients** |
| **Sprint 2** | **Error Handling & Debugging** | **🔴 High** | **2 hours (Day 2)** | **Mid-Day 2** | **Ishwarya**  **&**  **RajaHarshini** | **API logs, UI inputs** | **Improved API stability** |
| **Sprint 3** | **Testing & UI Enhancements** | **🟡 Medium** | **2 hours (Day 2)** | **Mid-Day 2** | **Entire**  **Team** | **API response, UI layout completed** | **Responsive UI, better user experience** |
| **Sprint 3** | **Final Presentation & Deployment** | **🟢 Low** | **1 hour (Day 2)** | **End of Day 2** | **Entire Team** | **Working prototype** | **Demo-ready project** |

**Sprint 1 – Setup & Integration (Day 1)**

* (🔴 High) Set up environment & install dependencies.
* (🔴 High) Integrate OpenAI API.
* (🟡 Medium) Build basic UI with input fields.

**Sprint 2 – Core Features & Debugging (Day 2)**

* (🔴 High) Implement AI recipe generation.
* (🔴 High) Debug API issues & handle errors.

**Sprint 3 – Testing, Enhancements & Submission (Day 2)**

* (🟡 Medium) Test API responses & refine UI.
* (🟢 Low) Final demo preparation & deployment.

**Phase-5: Project Development**

**Objective:**

Implement core features of the Flavour Fusion App.

**Development Process:**

* Implement API key authentication & OpenAI API integration.
* Develop recipe generation & sharing functionality.
* Optimize search queries for performance.

**Challenges & Fixes:**

* **Challenge:** API response delays.  
  **Fix:** Implement caching for frequently queried results.
* **Challenge:** Limited API calls per minute.  
  **Fix:** Optimize queries to fetch only necessary data.

**Phase-6: Functional & Performance Testing**

**Objective:**

Ensure that the Flavour Fusion App works as expected.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case ID** | **Category** | **Test Scenario** | **Expected Outcome** | **Status** |
| TC-001 | Functional | Query "Fusion recipe for paneer & pasta" | AI-generated fusion recipe displayed | ✅ Passed |
| TC-002 | Functional | Query "Vegan dessert ideas" | AI suggests vegan dessert options | ✅ Passed |
| TC-003 | Performance | API response time under 500ms | Fast response time | ⚠ Needs Optimization |
| TC-004 | UI Testing | Ensure UI works on mobile | Responsive UI | ❌ Failed - UI issues |
| TC-005 | Deployment | Host app on Vercel & Render | App accessible online | 🚀 Deployed |

**Final Submission:**

1. Project Report
2. GitHub/Code Repository Link
3. Presentation