Flavour Fusion: AI-Driven Recipe Blogging Studio

1. INTRODUCTION

1.1 Project Overview

Flavour Fusion is an AI-powered web application developed to generate structured and customized recipe blog content automatically. The system uses advanced Large Language Models (LLMs) to create engaging, detailed, and well-formatted recipe articles based on user input.

The application is built using Streamlit for the frontend and Google Gemini 2.5 Flash model for backend AI processing. Users can enter a recipe topic, select cuisine type, specify word count, and instantly generate professional-quality recipe blogs. The system also maintains session-based history and allows downloading generated content.

1.2 Purpose

The main purpose of this project is to:

• Assist food bloggers in generating recipe content instantly
• Reduce manual writing effort
• Improve productivity in content creation
• Provide structured and engaging blog articles
• Demonstrate practical implementation of Generative AI
• Support academic and professional learning in AI applications

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2. IDEATION PHASE

2.1 Problem Statement

Content creation for recipe blogs requires time, creativity, and structured formatting. Many food bloggers and content creators struggle to generate high-quality, SEO-friendly, and engaging content consistently.

Manual writing is time-consuming and repetitive. There is a need for an automated system that can generate structured recipe blog content quickly, accurately, and efficiently using Artificial Intelligence.

2.2 Empathy Map Canvas

Category Description

Thinks	How to write engaging recipe blogs faster?
Feels	Stressed due to content deadlines
Says	Writing blogs takes too much time
Does	Searches for recipe formats online
Pain	Writer's block, low productivity
Gain	Instant structured content

2.3 Brainstorming

During brainstorming, various ideas were discussed:

1. Manual recipe template generator
2. SEO-based blog assistant
3. AI chatbot for cooking help
4. AI-based recipe blog generator
5. Automated content publishing system

The final idea selected was an **AI-based Recipe Blog Generation Platform**.

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3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

User opens application

Enters recipe topic

Selects cuisine type

Chooses word count

Clicks "Generate Recipe"

Receives AI-generated blog

Downloads recipe

3.2 Solution Requirement

Hardware Requirements

• Computer / Laptop
• Internet connection

Software Requirements

• Python 3.10+
• Streamlit
• Google Generative AI (Gemini API)
• python-dotenv
• Requests Library

3.3 Data Flow Diagram

User Input

Prompt Construction

Gemini API Request

AI Response

Display Output

Session Storage

Download File

3.4 Technology Stack

Component	Technology
Frontend	Streamlit
Backend	Python
AI Model	Google Gemini 1.5 Flash
Storage	Streamlit Session State
API	Google Generative AI API
Environment	dotenv

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4. PROJECT DESIGN

4.1 Problem Solution Fit

The proposed solution provides an automated and intelligent method of generating recipe blog content. It eliminates manual effort and improves productivity by using advanced Generative AI models.

4.2 Proposed Solution

The system allows users to:

⌉ Enter recipe topic
⌉ Select cuisine type
⌉ Choose word count
⌉ Generate AI-based recipe blog
⌉ View structured output
⌉ Download generated content
⌉ Store session history

This creates a complete AI-powered content creation workflow.

4.3 Solution Architecture

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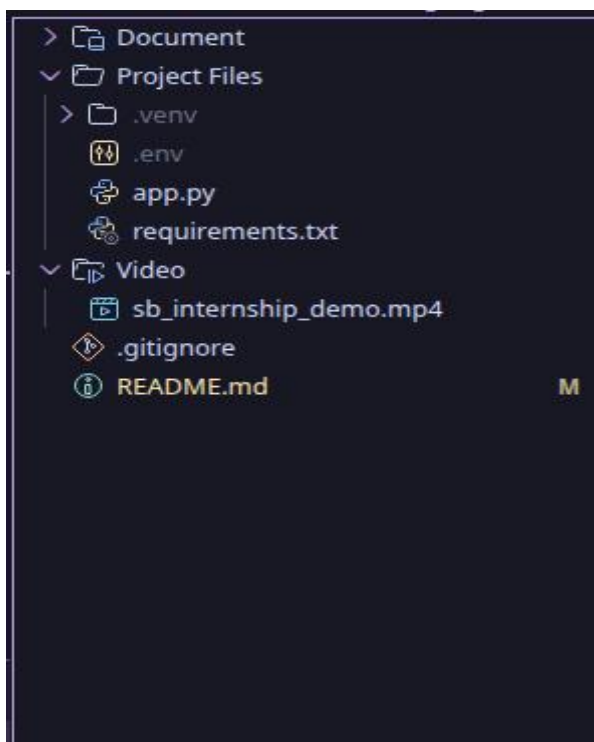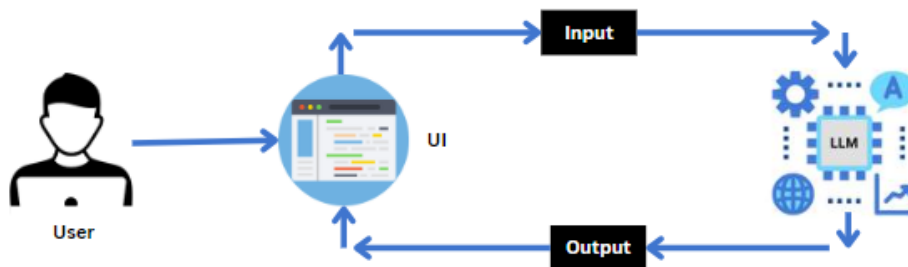
5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Phase	Duration
Requirement Analysis	1 Week
Design	1 Week
Development	2 Weeks
Testing	1 Week
Deployment	1 Week

Phase	Duration
Documentation	1 Week

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Response time: 5–20 seconds (depending on word count)
API validation: Successful
Session storage: Working properly
Download functionality: Working
Concurrent users: Limited (Local deployment)

Testing confirmed stable performance and accurate content generation.

7. RESULTS

Home Screen:

Recipe Generation Output:

Input Form Interface:

Recipe: Thai Curry

Cuisine: Mexican | Word Count: 500

Sabor Meets Spice: Our Mexican-Thai Curry Fusion!

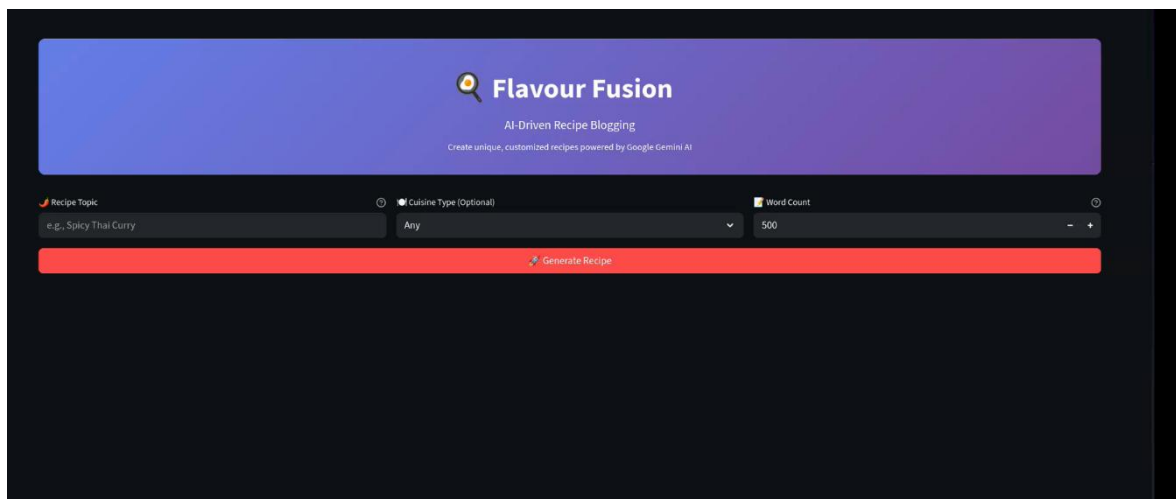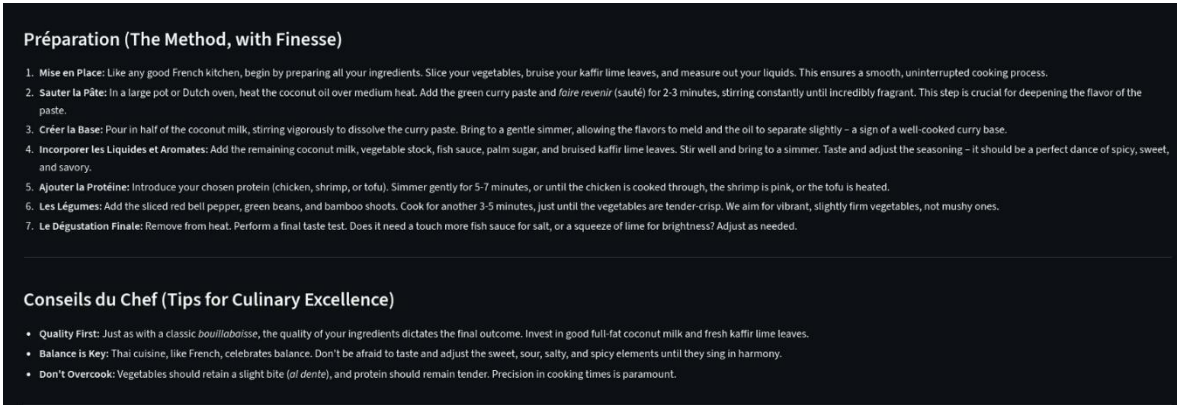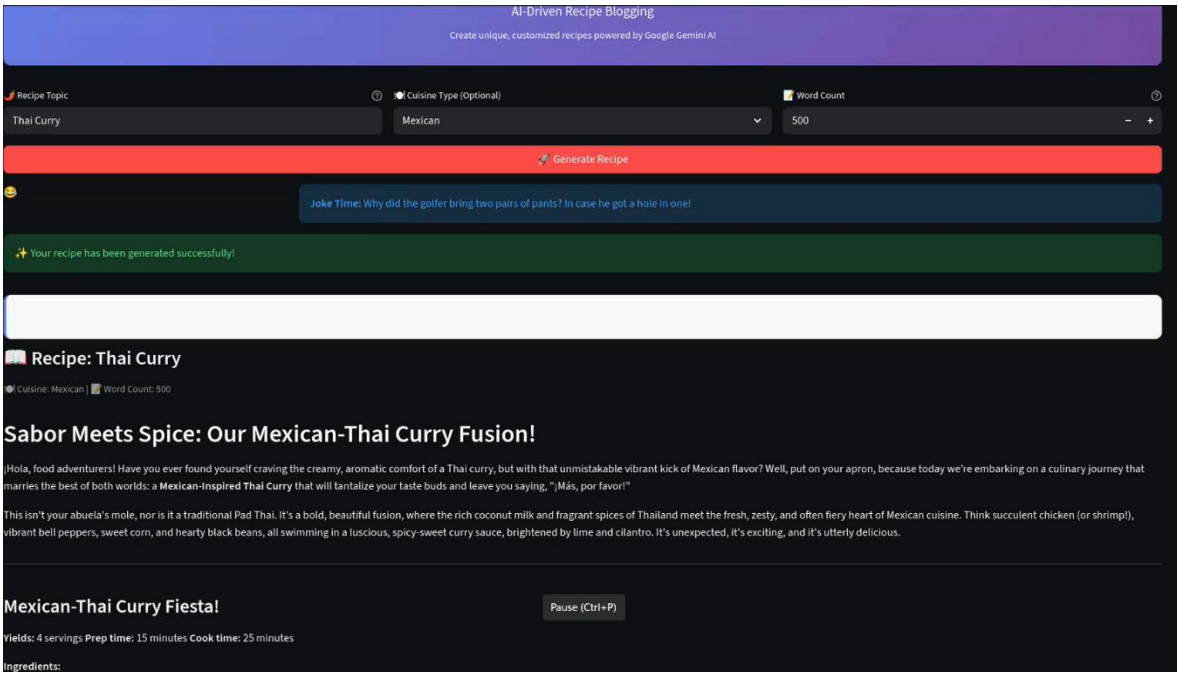¡Hola, food adventurers! Have you ever found yourself craving the creamy, aromatic comfort of a Thai curry, but with that unmistakable vibrant kick of Mexican flavor? Well, put on your apron, because today we're embarking on a culinary journey that marries the best of both worlds: a **Mexican-Inspired Thai Curry** that will tantalize your taste buds and leave you saying, "¡Más, por favor!"

This isn't your abuela's mole, nor is it a traditional Pad Thai. It's a bold, beautiful fusion, where the rich coconut milk and fragrant spices of Thailand meet the fresh, zesty, and often fiery heart of Mexican cuisine. Think succulent chicken (or shrimp!), vibrant bell peppers, sweet corn, and hearty black beans, all swimming in a luscious, spicy-sweet curry sauce, brightened by lime and cilantro. It's unexpected, it's exciting, and it's utterly delicious.

Mexican-Thai Curry Fiesta!

Pause (Ctrl+P)

Yields: 4 servings **Prep time:** 15 minutes **Cook time:** 25 minutes

Ingredients:

Préparation (The Method, with Finesse)

1. **Mise en Place:** Like any good French kitchen, begin by preparing all your ingredients. Slice your vegetables, bruise your kaffir lime leaves, and measure out your liquids. This ensures a smooth, uninterrupted cooking process.
2. **Sauter la Pâte:** In a large pot or Dutch oven, heat the coconut oil over medium heat. Add the green curry paste and *faire revenir* (sauté) for 2-3 minutes, stirring constantly until incredibly fragrant. This step is crucial for deepening the flavor of the paste.
3. **Créer la Base:** Pour in half of the coconut milk, stirring vigorously to dissolve the curry paste. Bring to a gentle simmer, allowing the flavors to meld and the oil to separate slightly – a sign of a well-cooked curry base.
4. **Incorporer les Liquides et Aromates:** Add the remaining coconut milk, vegetable stock, fish sauce, palm sugar, and bruised kaffir lime leaves. Stir well and bring to a simmer. Taste and adjust the seasoning – it should be a perfect dance of spicy, sweet, and savory.
5. **Ajouter la Protéine:** Introduce your chosen protein (chicken, shrimp, or tofu). Simmer gently for 5-7 minutes, or until the chicken is cooked through, the shrimp is pink, or the tofu is heated.
6. **Les Légumes:** Add the sliced red bell pepper, green beans, and bamboo shoots. Cook for another 3-5 minutes, just until the vegetables are tender-crisp. We aim for vibrant, slightly firm vegetables, not mushy ones.
7. **Le Dégustation Finale:** Remove from heat. Perform a final taste test. Does it need a touch more fish sauce for salt, or a squeeze of lime for brightness? Adjust as needed.

Conseils du Chef (Tips for Culinary Excellence)

- **Quality First:** Just as with a classic *bouillabaisse*, the quality of your ingredients dictates the final outcome. Invest in good full-fat coconut milk and fresh kaffir lime leaves.
- **Balance is Key:** Thai cuisine, like French, celebrates balance. Don't be afraid to taste and adjust the sweet, sour, salty, and spicy elements until they sing in harmony.
- **Don't Overcook:** Vegetables should retain a slight bite (*al dente*), and protein should remain tender. Precision in cooking times is paramount.

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Suggestions de Service (Serving with Elegance) ∞

Serve this exquisite Thai Green Curry piping hot over steamed Jasmine rice. Garnish with a scattering of fresh Thai basil leaves and, if desired, a few thin slices of red chili for a touch of couleur and heat. For a beverage pairing, a crisp, unoaked Sauvignon Blanc or a light-bodied Riesling would complement the curry beautifully, echoing its aromatic complexity.

Informations Nutritionnelles (Approximatif par Portion)

This curry, rich in plant-based ingredients and lean protein, offers a balanced meal. Approximately 450-550 calories, 25-30g protein, 30-40g fat (mostly healthy fats from coconut milk), and 20-30g carbohydrates (excluding rice). It's a good source of vitamins, minerals, and fiber.

Conservation et Réchauffage (Storage and Reheating)

Leftovers are often even more delicious as the flavors deepen! Store any remaining curry in an airtight container in the refrigerator for up to 3 days. To reheat, gently warm on the stovetop over medium-low heat, stirring occasionally, until heated through. Add a splash of water or stock if it seems too thick.

Et voilà! A dish that transcends borders, prepared with the precision and passion of a French kitchen. Enjoy this delicious journey, and may your culinary adventures always be as rewarding!

📥 Download Recipe

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8. ADVANTAGES & DISADVANTAGES

Advantages

- Instant blog generation
- Easy to use interface
- Customizable word count
- AI-powered content
- Download option
- Session history tracking

Disadvantages

- Requires internet connection
- Depends on API availability
- Limited free API usage
- No built-in SEO optimization

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9. CONCLUSION

The Flavour Fusion project successfully demonstrates the practical implementation of Generative AI in content creation. By integrating Google Gemini with a Streamlit-based interface, the system provides an intelligent and automated recipe blogging solution.

It reduces manual effort, improves productivity, and showcases real-world AI integration for web applications.

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10. FUTURE SCOPE

Future enhancements include:

ϖ Multi-user login system
ϖ Cloud database integration
ϖ SEO optimization module
ϖ Blog publishing integration
ϖ Image generation for recipes
ϖ Mobile application version
ϖ Voice-based recipe input

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11. APPENDIX

Software Libraries

• Streamlit
• python-dotenv
• Google Generative AI
• Requests

API

• Google Gemini API

References

• Google AI Documentation
• Streamlit Documentation
• Python Documentation

GitHub Link:

https://github.com/yash5800/internship_smartBridge_long.git

Video Demo Link:

https://drive.google.com/file/d/1fQUtQCyz3dLtQtl-_W6Id-M5N-nzRltl/view?usp=sharing