

05318 Final Project

SMART RECIPE FINDER

AI-Powered Recipe Recommendation with Interactive Feedback Loop

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WHAT I BUILT

- Interactive recipe finder using Gemini AI API
- Features: ingredient-based search, multiple filters, feedback loop, recipe bookmarking...
- Input: ingredients + simple preferences
- Output: AI-generated recipes

The image displays three screenshots of the "Smart Recipe Finder" application, which is an AI-powered recipe search tool.

Screenshot 1: Search Interface

This screenshot shows the main search interface. It features a large input field for "Add Ingredients" (e.g., chicken, broccoli) and a "Search Recipes" button. Below this are dropdown menus for "Cuisine Style (Optional)" (Any), "Prep Time (Optional)" (Any), and "Dietary Preference (Optional)" (Any). A "Saved Recipes (0)" section indicates no saved recipes yet. At the bottom are "Feedback Controls" for banning or replacing ingredients like cilantro or butter, and a "Feedback Log" section.

Screenshot 2: Recommended Recipes

This screenshot shows the results of a search for "egg". It lists two recommended recipes: "Egg Fried Rice (Quick)" and "Egg Drop Soup (Fast)". Each recipe card includes a thumbnail, a title, a brief description, cooking time, servings, and difficulty level (Easy). Below each card are sections for "Available ingredients" (e.g., rice, soy sauce, vegetable oil, onion, peas, carrots for Egg Fried Rice; egg, chicken broth, cornstarch, soy sauce, green onions, sesame oil, salt, white pepper for Egg Drop Soup), "Need to add" (e.g., rice, soy sauce, vegetable oil, onion, peas, carrots for Egg Fried Rice; chicken broth, cornstarch, soy sauce, green onions, sesame oil, salt, white pepper for Egg Drop Soup), and a "View steps" button.

Screenshot 3: Detailed Recipe Page

This screenshot shows a detailed view of the "Egg Fried Rice (Quick)" recipe. It includes the recipe title, cooking time (15 minutes), servings (2), and difficulty level (Easy). The "Required Ingredients" section lists egg, rice, soy sauce, vegetable oil, onion, and carrots. The "Cooking Steps" section provides a numbered list of instructions: 1. Cook rice according to package directions. 2. Heat vegetable oil in a wok or large pan. 3. Scramble eggs in the pan. 4. Add cooked rice and stir-fry. 5. Add chopped onion, peas, and carrots. Stir-fry until heated through. 6. Stir in soy sauce to taste. Serve immediately. The "Cooking Tips" section suggests using day-old rice for best results. A "Your notes for this recipe" section at the bottom allows users to add comments.

WHY THIS APPLICATION

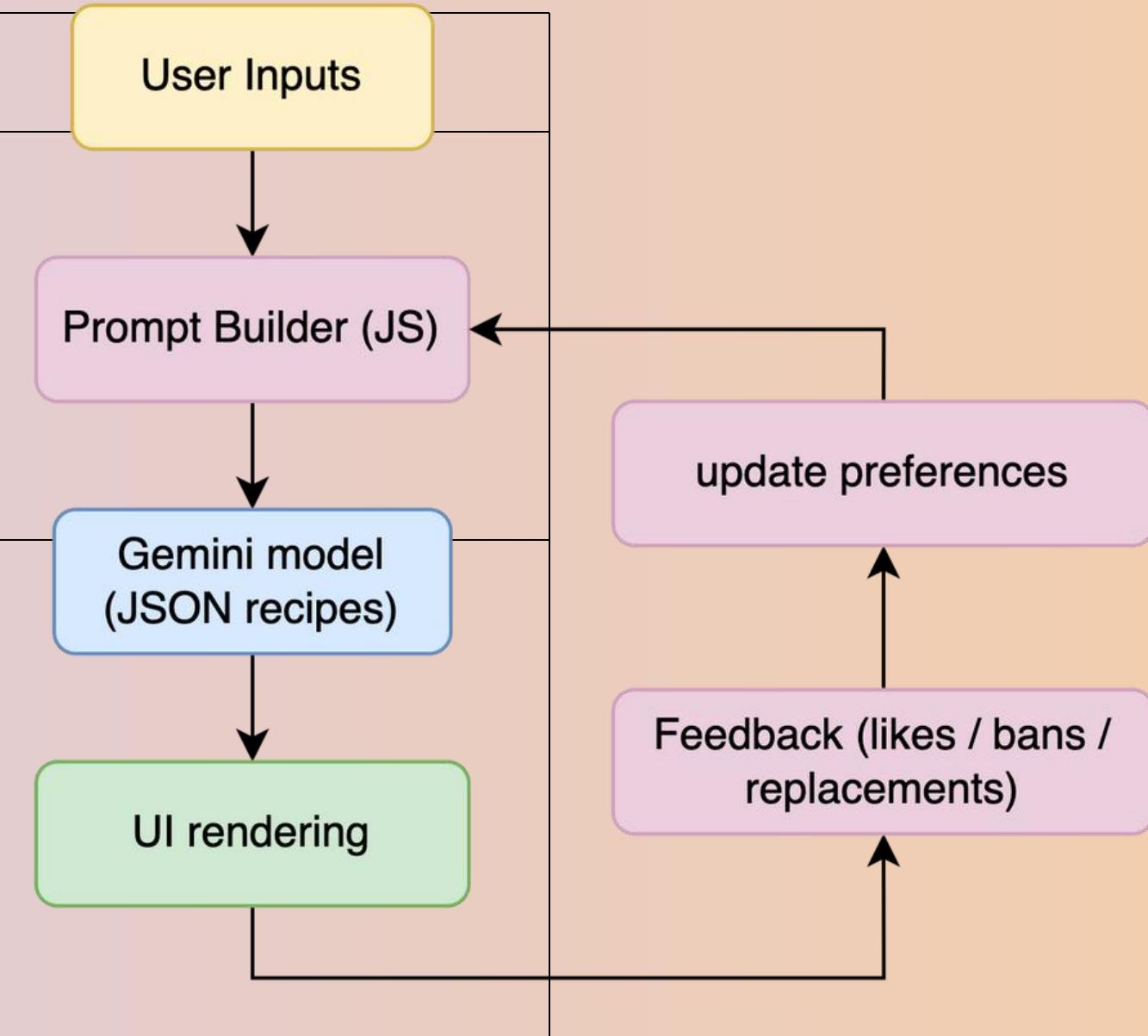
People often have ingredients but don't know what to cook.

Generic recipe apps don't learn from individual preferences.

AI system that adapts to user's taste, dietary needs, and constraints.

IMPLEMENTATION

- Model: Gemini 2.0 Flash (Google's LLM)
- Why Gemini:
 - Real-time recipe generation (no pre-trained dataset needed)
 - Structured JSON output for consistent format
 - Context-aware: incorporates user feedback dynamically
- Architecture:
 - Frontend: HTML + Tailwind CSS + vanilla JS
 - API Integration: Gemini API with custom prompt engineering
 - Storage: localStorage for user preferences persistence
- No fixed dataset: the model is the recipe generator

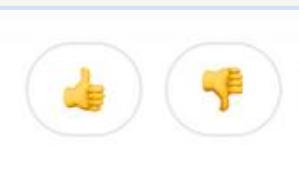


CONCEPTS FROM LECTURES

Designing for Failures
and AI Alignment

Human-in-the-loop &
granular feedback

[like & dislike]



[notes/correction]

Your notes for this recipe

e.g., Step 2 should sauté for 5 minutes, not 15.

Add

Transparency &
Interpretability

Showing matched
ingredients & explicit
“reason” for each recipe

Egg Fried Rice (Quick)
Classic, quick Chinese dish utilizing eggs. Simple and fast to prepare.
🕒 15 minutes 🍲 2 servings Easy

Available ingredients:

✓ egg

Need to add:

+ rice ↴ + soy sauce ↴ + vegetable oil ↴ + onion ↴ + peas ↴ + carrots ↴

Human-Centered
AI Design

Remember interactions &
learn from user behavior
(stored preferences)

[ban &
replace]

+ soy sauce ↴

Your Feedback Controls

Ban / avoid ingredient
e.g., cilantro

Replace ingredient
e.g., butter e.g., olive oil

Refine Recommendations

PILOT USER STUDY & INSIGHTS

- 7 target users
- Task:
 - Explore the web app
 - Use one recommended recipe to cook a real dish
 - Short interview for feedback
- Insights: What we learned from observing real users that meaningfully informs design decisions.
 - Customization Flexibility Matters
 - Transparency Builds Trust
 - Respect User Preferences
 - Actionable Results Are Essential
 - Sustained Engagement Drives Value
 - ...

: “Need prep time filter for busy schedules”
Added prep time filter (15min / 30min / 60min / 60+min)

“Want to customize dietary preferences beyond preset options”

Added “Custom/Other” option with free text input

“Need a way to save recipes for later”

Implemented bookmarking with saved recipes view

“Recipes were accurate and practical; time estimates matched reality”

“Loved the ingredient ban and replacement feature, finally no cilantro!”

“Beautiful UI! This AI recipe finder learns my preferences, saving so much time compared to manual recipe searching!”

THANKS