Chef Assistant

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COMP 560 - AI

OVERVIEW

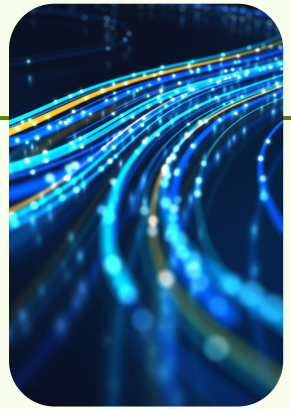
Cultural Cooking Assistant

Problem	• College students face decision fatigue and repetitive meals • Hard to come up with meals given random ingredients
Solution	• An NLP-powered assistant
How	• Analyzes ingredients you already have • Generates context-aware cooking instructions • Applies cultural “twists” to familiar recipes
Why	• Reduces stress around meal planning • Encourages cultural exploration and sharing

HOW IT WORKS

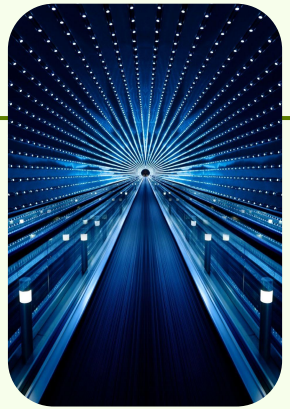
Data Collection & Preprocessing

- Source: Kaggle recipe dataset (cuisine + ingredient lists)
- Tools: pandas, NLTK for cleaning, tokenization, standardization



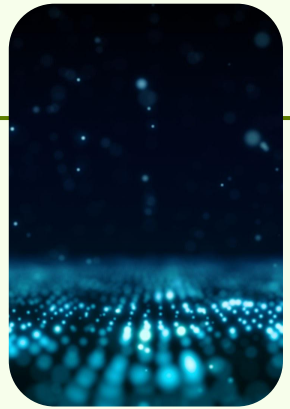
Ingredient-Based Retrieval

- Vectorize recipes via TF-IDF on ingredient tokens
- Match user's input list → retrieve top recipes



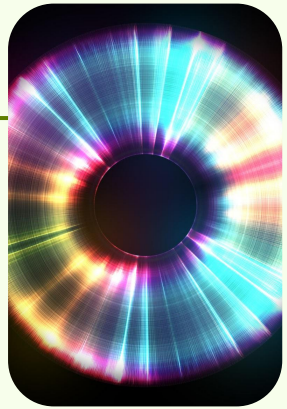
Cultural Pattern Mining

- Build ingredient frequency tables per cuisine
- Apply Apriori for co-occurrence rules (e.g., cumin + turmeric → garam masala)
- Train Word2Vec on ingredient tokens for semantic substitutions



Recipe Generation

- Fine-tune a lightweight GPT-2 on our recipe corpus
- Generate step-by-step instructions with proper syntax



Cultural Substitution

- Create rule-based & Word2Vec-informed substitution tables
- Swap ingredients to reflect target cuisine (mirin → yogurt, noodles → rice)

Progress

Done

- Dataset selected and cleaned
- Basic UI almost ready

In Progress

- Generating cuisine-specific frequency tables
- Running Apriori to extract cultural ingredient rules
- Training Word2Vec model on ingredient tokens

To-do

- Fine-tune GPT-2 on filtered recipes for instruction generation
- Develop substitution module for on-the-fly cultural spins