NUTRIFUSION

Medically safe, personalized meals for your health condition and age .

OVERVIEW

- NutriFusion provides personalized recipe recommendations via Mistral-7B, FAISS, and Cleanlab to guarantee safe and medically approved meal suggestions according to age and health status.“

Key point:

- Uses big data (70K+) like recipes and health records
- The deployment is done on '''Gradio'''
- Hallucination filtering''' for safety.

Real World Problems

- Dietary suggestions usually apply to everybody and are not effectively individualized.
- Though there are apps for everything, there is presently no one that would allow people some ingredient-level medical safety checks.
- No user-friendly source is available through which users can make health-safe versions of their cherished recipes.

Why should we solve this ?

- Business Possibilities in Economically Personalized Nutrition Apps
- Impact on Health: Better Compliance in Dietary Plans Reduces Medical Costs.
- Measurable Goals:

  Have a 0% Inclusion of Harmful Ingredients

  Maintain an AI Output Hallucination Rate of <5%

TARGET AUDIENCE & OPPORTUNITY

Target audience

•Normal People

- •Adults with diabetes, hypertension, obesity.
- •Seniors needing age-specific nutrition.
- •Fitness enthusiasts.
- •Families seeking healthier meals.

- **Market Opportunity:** Growing demand for personalized, AI-driven dietary tools.

Industry snapshot

- **Industry**: nutrition recommendations by AI based on age, health condition, and nutrition needs.

- **Market growth** :

  2023 – USD 11.88B

  2032- USD 46.87 (16.8 %)

- **Why Now?** *(WHO, IDF)*

- **Diabetes:** 537M adults → 783M by 2045
- **Hypertension:** 1.28B adults globally
- **Obesity:** 1 in 8 people worldwide

How the domain works ?

DIFFERENTIATION

- Compatible with any recipe downloaded or not.
- Removes toxic ingredients while automatically adding other healthy components.
- Control hallucination using Cleanlab-TLM.
- scalable (PySpark + Gradient GPU deployment).
- FAISS-based semantic search for finding similar recipes.

IMPLEMENTED FEATURES

1. Personalized recipe input (dish + age + health condition).
2. FAISS-based similar recipe retrieval.
3. Mistral-7B recipe transformation.
4. Rule Engine for allowed/restricted ingredients.
5. Cleanlab validation for safety & trust scoring.
6. Nutrient breakdown output.
7. Big data cleaning & processing with PySpark.

DATA GATHERING & INSIGHTS

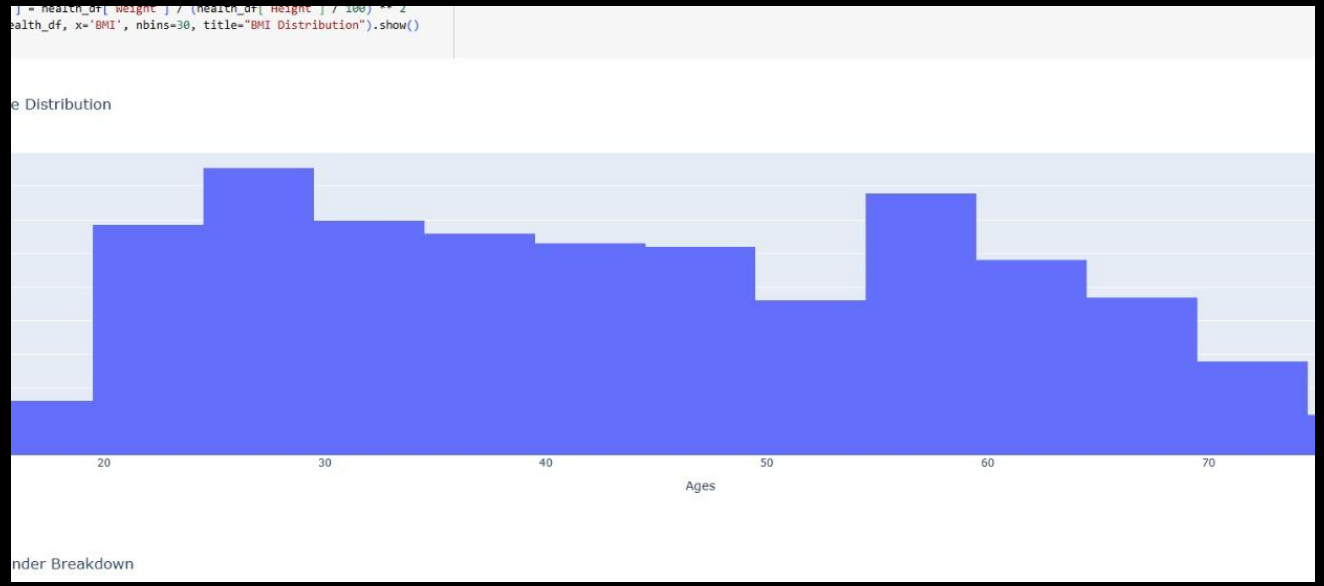
Data sources

- Spoonacular, Edamam, and OpenFoodFacts (recipes & nutrients)
- Kaggle Health dataset-age-related nutrient requirements
- 70,000 recipes + 70,000 health profiles

Dataset overview

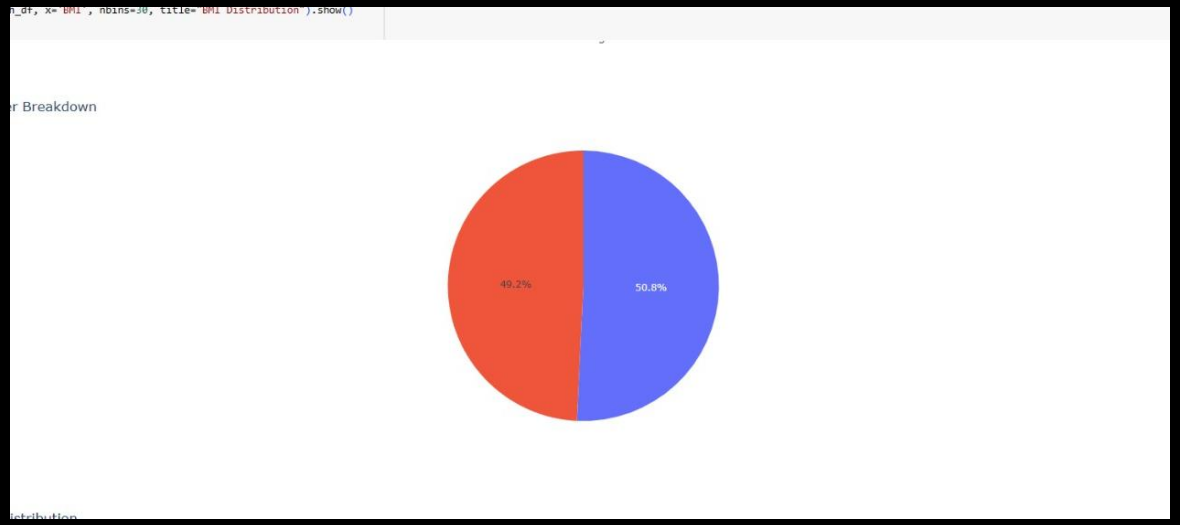
Dish name	Ingredients
Nutrient values	Allowed or restricted disease

DATASET OVERVIEW

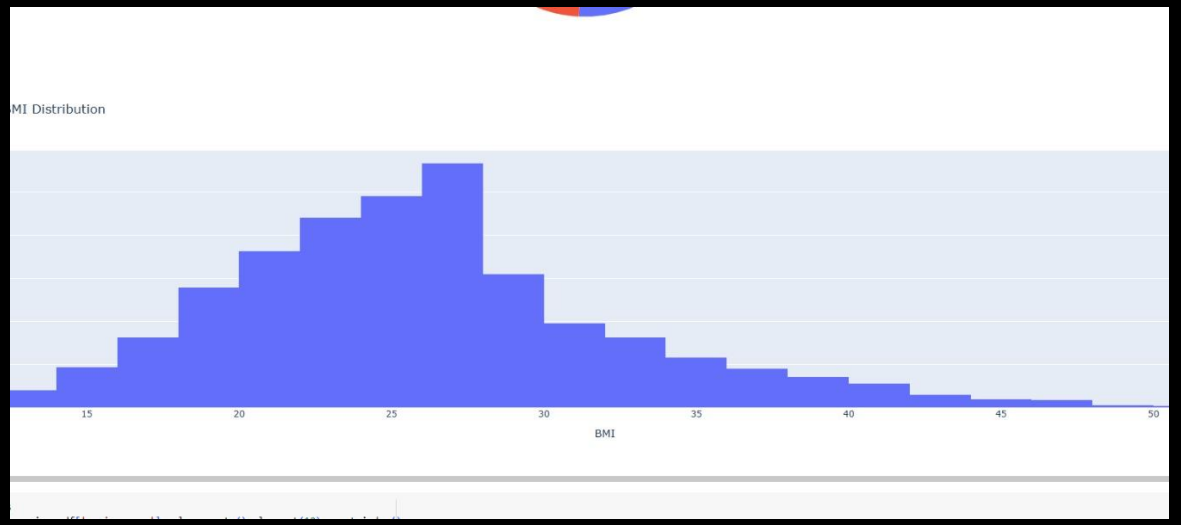


Age distribution

DATASET OVERVIEW

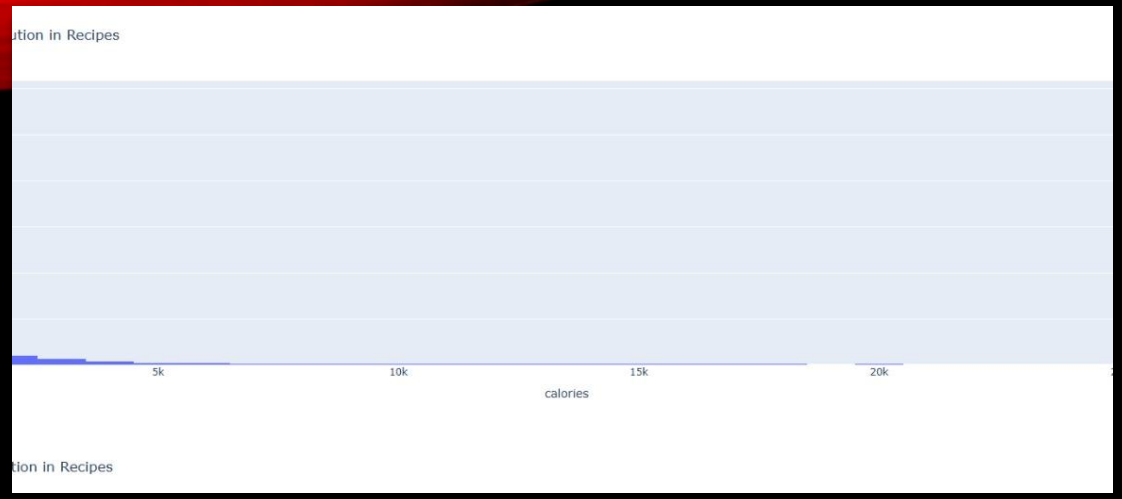


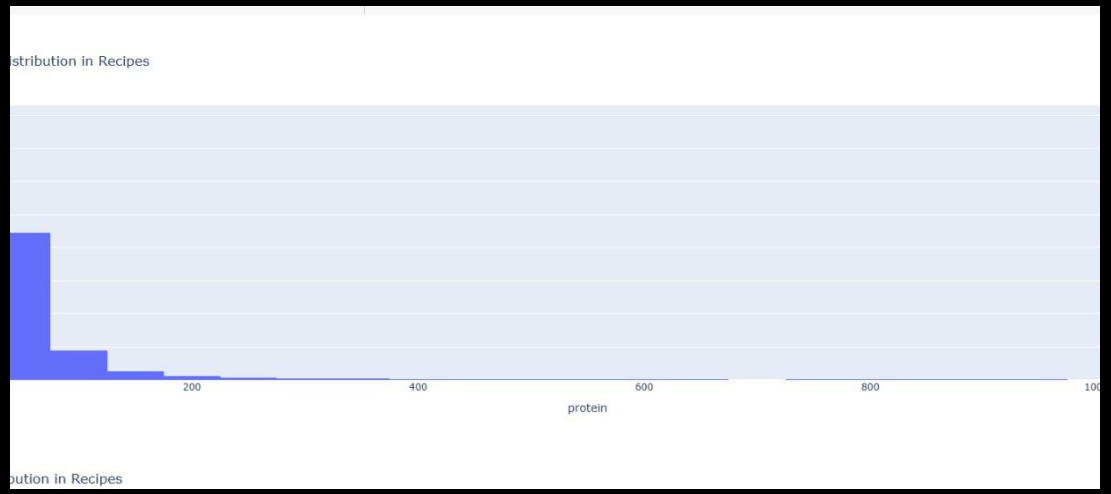
Gender Breakdown

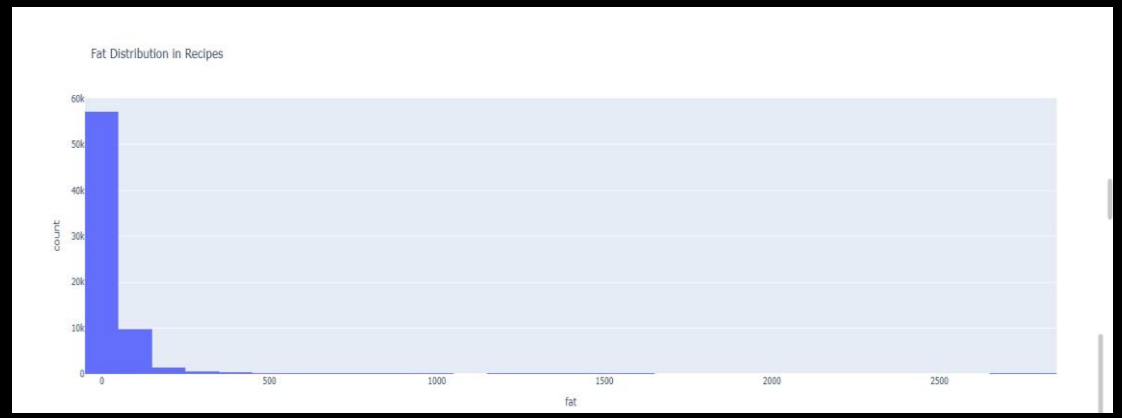


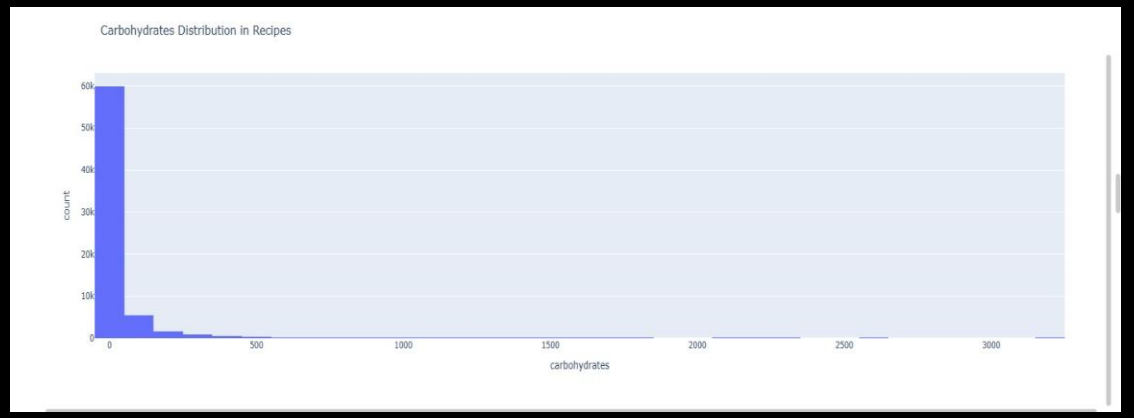
BMI Distribution

Nutrient distribution Per Recipe

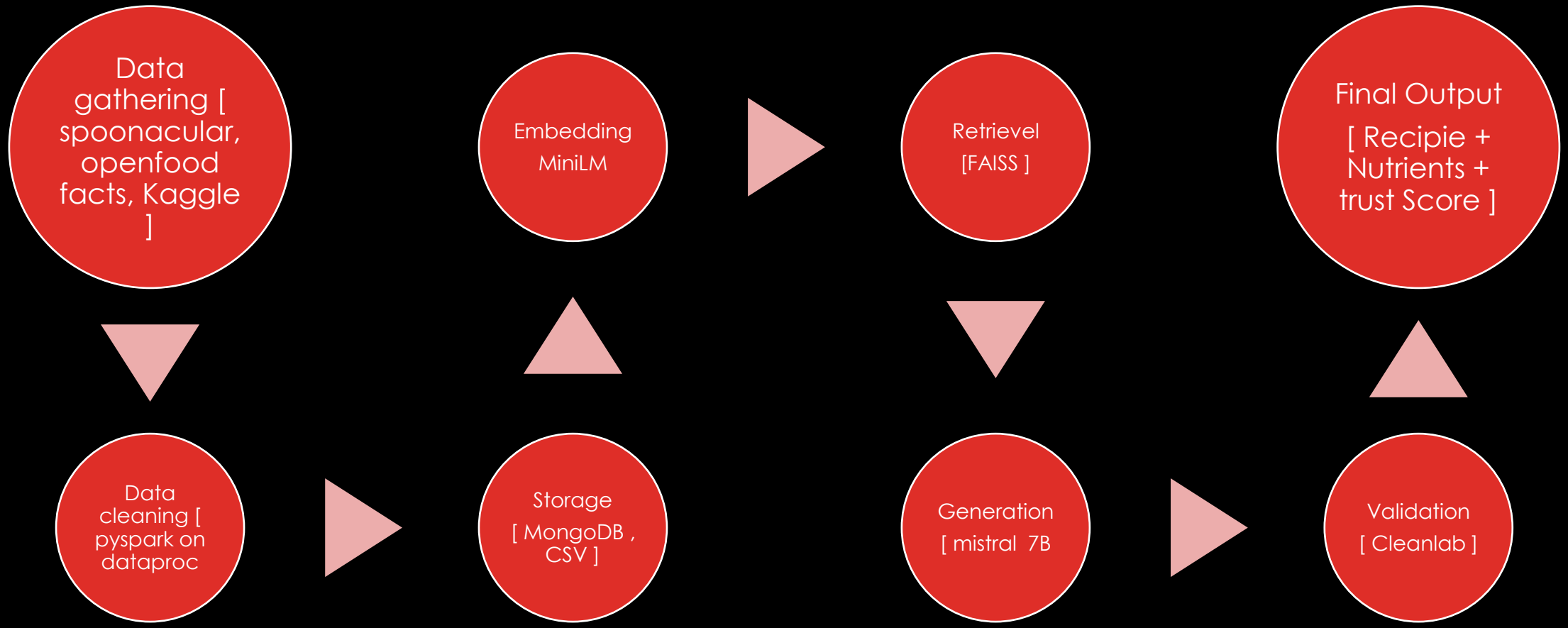




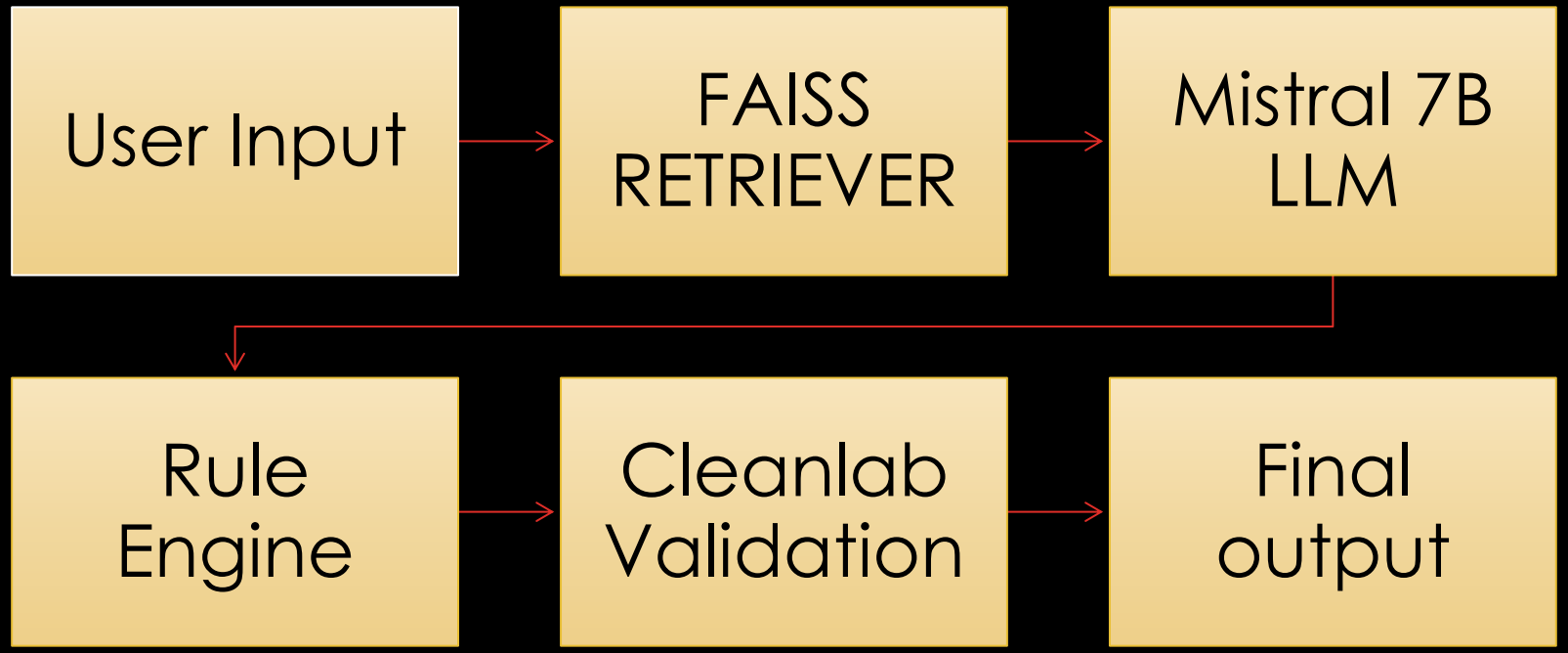




BIG DATA PIPELINE



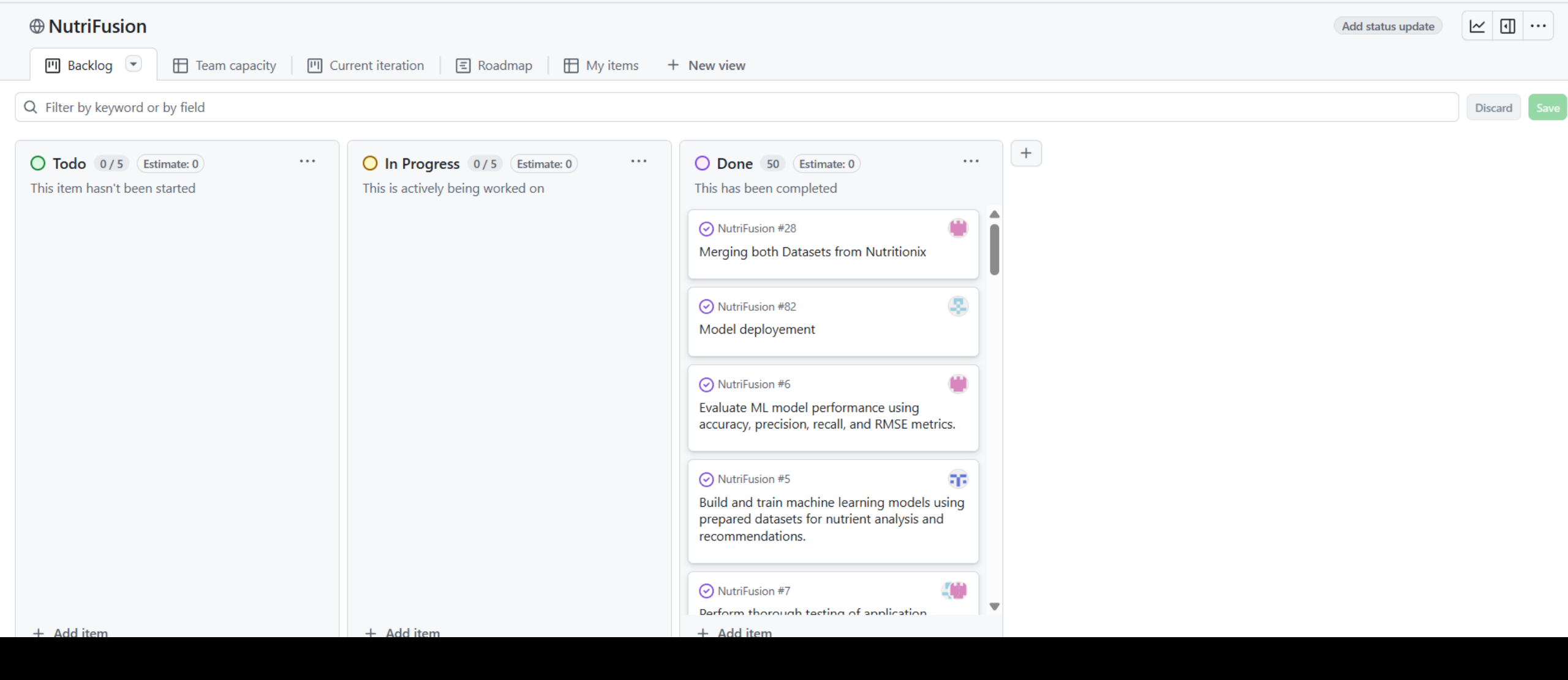
WORKFLOW :


User Input
FAISS RETRIEVER
Mistral 7B LLM
Rule Engine
Cleanlab Validation
Final output

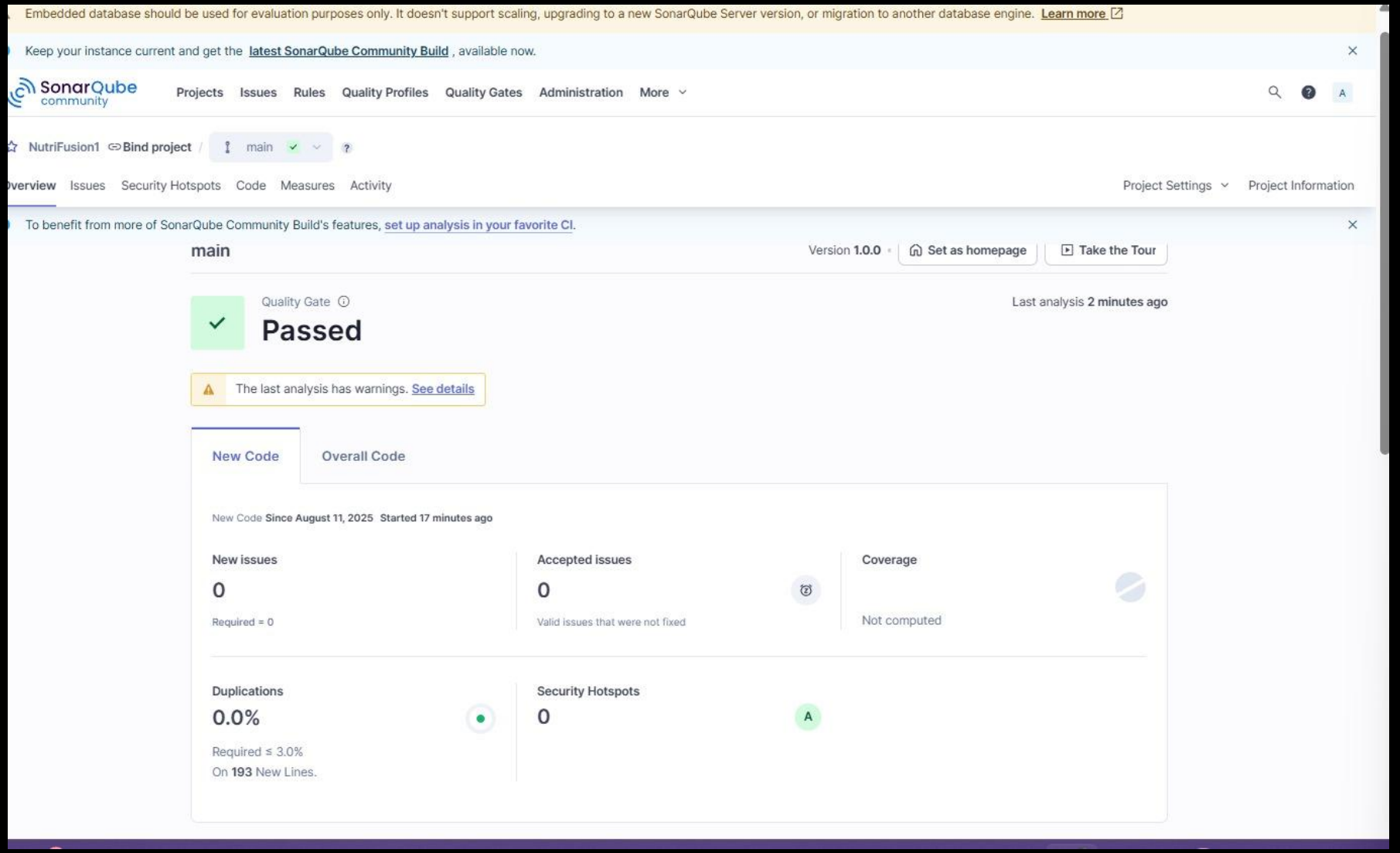
TOOLS & TECHNOLOGES USED FOR THIS PROJECT:

- **LLM:** Mistral-7B-Instruct
- **Embedding:** MiniLM
- **Vector DB:** FAISS
- **Validation:** Cleanlab-TLM
- **Data Processing:** PySpark on Google Cloud Dataproc
- **Storage:** MongoDB
- **Deployment:** GradiO (GPU)

GITHUB PROJECT BOARD



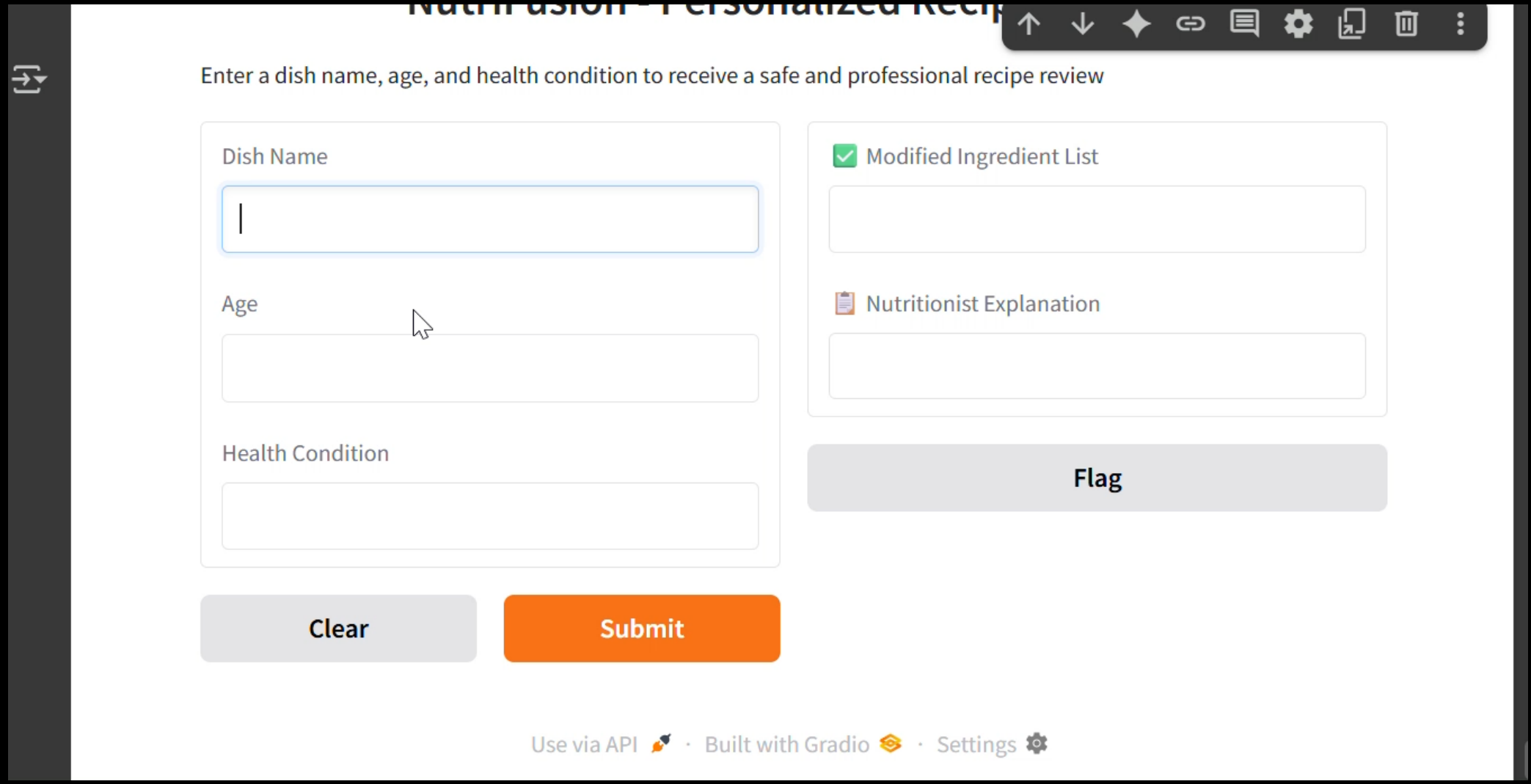
SONARQUBE CODE QUALITY



FUTURE ENHANCEMENTS :

- Multi-disease support
- Mobile app integration
- Multilingual recipes
- Grocery list generator

DEMO VIDEO


Enter a dish name, age, and health condition to receive a safe and professional recipe review
Dish Name
Age
Health Condition
Modified Ingredient List
Nutritionist Explanation
Flag
Clear
Submit
Use via API · Built with Gradio · Settings

CONCLUSION

- Provides safe and personalized recipe recommendations using AI.
- Adjusts recipes based on user’s age and health condition.
- Ensures medical safety through strict ingredient rules.
- Uses big data processing for accuracy and scalability.
- Helps users make healthier food choices easily.
- Has strong potential for real-world impact and future growth.

THANK YOU