

SERVERLESS-GENAI- FOOD-ANALYZER-APP

BY: VAISHNAVI MASKE
KHUSHI JADHAV
SHRUTI JADHAV

Project Guide : Ms .S. V. SARAF

INTRODUCTION

Food analyzer app is a personalized GenAI nutritional webapp for your shopping and cooking recipes built with serverless architecture and generative AI capabilities.

- Customers use their camera to scan a bar code of a product to get the explanations of the ingredients and nutritional information of a grocery product personalized with your allergies and diet.
- Customers can also take a picture of food products and discover 3 personalized recipes based on their food preferences.





Proposed Solution

Introducing the Solution: A Smart Food Analyzer!

To address the challenges of ingredient transparency, dietary personalization, and meal inspiration, we propose the Food Analyzer App — a serverless GenAI-powered nutritional assistant designed to personalize grocery shopping and cooking experiences. The solution combines barcode scanning, image recognition, and generative AI to offer users real-time, customized insights and recipe suggestions

Barcode Scanning with Personalization

- Users scan a product barcode using their smartphone camera.
- The app fetches detailed ingredient and nutritional data from Open Food Facts.

Image-Based Recipe Generator

- Users take a photo of available ingredients (e.g., items in their fridge).
- The app uses AI to identify ingredients and generate 3 personalized recipes.

Methodology

- 📷 1. Input
 - Scan barcode or upload food image
 - Set dietary preferences
- 🖌️ 2. Preprocessing
 - Encode image (Base64)
 - Fetch barcode data (OpenFoodFacts)
- 🧠 3. AI Analysis
 - Detect ingredients via Amazon Bedrock (Claude 3)
 - Extract nutrition & allergen info
- 🔥 4. Calorie & Allergen Tracking
 - Estimate calories, carbs, protein, fats
 - Highlight allergens
 - Assign health score

- 👨‍🍳 5. Recipe Generation
 - Generate 3 personalized recipes
 - Include ingredients, steps, and difficulty
- ☁️ 6. Backend (AWS)
 - Lambda | S3 | DynamoDB | Cognito | API Gateway
- 🚀 7. Deploy
 - Serverless deployment with scalability
 - Continuous integration & updates
- 💻 8. Output
 - Responsive UI with:
 - Ingredients | Health Alerts | Recipes | Visual Insights

Stack :

The back-end of the app is made using AWS services such as:

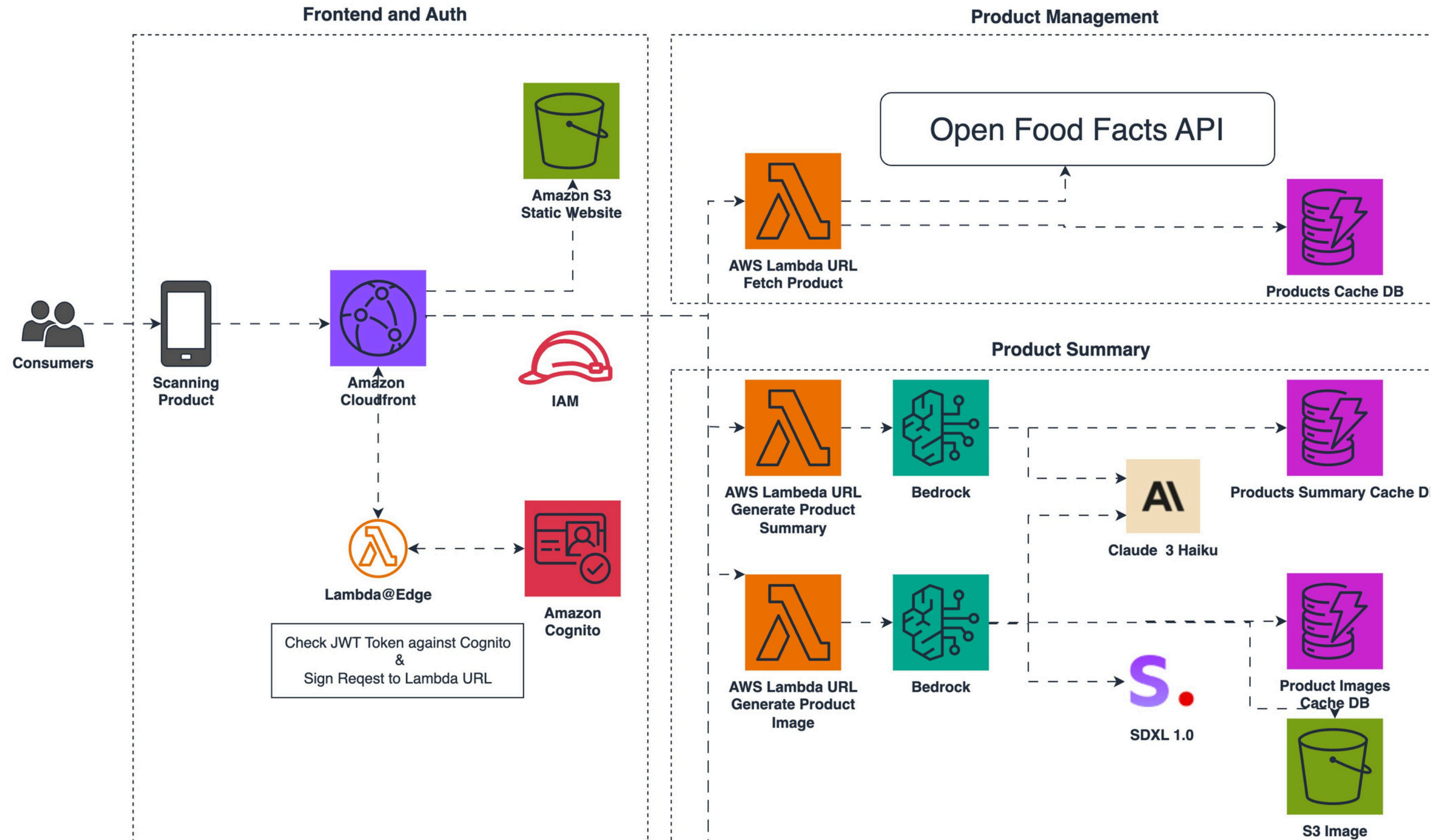
Amazon Cognito - Manages user authentication and authorization

AWS LambdaURL - Provides serverless endpoints via Lambda functions,

Amazon DynamoDB - A fast and flexible NoSQL database used to store user data

Amazon S3 - Offers secure and scalable storage for images

Amazon Bedrock - Integrates generative AI capabilities into the app using foundation models without needing ML infrastructure.



Output :

Website Link : d2i9tts2ngvhjn.cloudfront.net

Scan

544900000996

OK

Obtain personalized nutritional information for your product

1 Set your preferences

2 Click on "Scan barcode" and scan a bar code

Scanned code: 544900000996 | Product: Coca-Cola Can

Here are the ingredients found in the product

Click on each ingredient to view AI-generated detailed descriptions

Water

Sugar

Carbon dioxide

Color E150d

Phosphoric acid

Natural flavorings

Caffeine

Here are the additives found in the product

Click on each additive to view AI-generated detailed descriptions

En:e150d

En:e290

En:e338

Summary of ingredients generated by AI

Coca-Cola is not a suitable recommendation for a vegetarian user who prefers less salt, as it contains sugar, phosphoric acid, and caffeine, which may not align with their dietary preferences. The high sugar content and lack of nutritional value make it an unhealthy choice.

Benefits


None

Disadvantages

High in sugar and calories with no nutritional value

Contains phosphoric acid, which can be harmful in excess

Provides caffeine, which may not be desirable for all users



Here are the ingredients detected in the image using AI

carrots

tomatoes

mushrooms

parsley

Here are 3 recipe suggestions generated by AI

Roasted Carrot and Mushroom Salad
A fresh and flavorful salad with roasted carrots, sautéed mushrooms, and a zesty dressing.

Vegetable Stir-Fry with Tomato Sauce
A colorful and nutritious stir-fry with carrots, mushrooms, and tomatoes, served over a bed of rice.

Future Scope



- AI-Powered Meal Planning & Smart Shopping
- Enhanced Image & Barcode Recognition
- Food Safety & Allergen Alerts
- Partnerships with Healthcare & Nutrition Experts

Conclusion

The Food Analyzer App simplifies healthy living by offering personalized nutrition insights and meal ideas using GenAI, barcode scanning, and image recognition. It enhances grocery shopping and cooking experiences while promoting transparency and well-being. With room to grow into health integration and sustainability, it's a smart step toward the future of food.

THANK YOU