RakuAssist - A Personal Assistant for your Online / Offline Purchase

Solution Description

Problem Statement Relocating? Shopping for a special occasion? Just need to update your wardrobe? How many hours and rupees have you spent scrolling through different apps, manually applying filters and yet couldn't find what you were looking for?

How many times have you felt that you're buying things online that you don't even use, that your monthly expenses are going out of hand?

How many times were you duped by the seller who sent you a fake or a damaged product, which created the extra hassle of contacting customer care for returning them?

How many times were you frustrated at yourself when you forgot to apply the offer at checkout, which you were eligible for, that could have saved you some money?

How would you like to have a gamified shopping experience where you get Rakuten Superpoints for the right purchases and pass levels and redeem them for actual products?

Our Solution Imagine a shopping experience that's not only tailored to your needs but also helps achieve financial goals. Meet RakuAssist, your new shopping assistant integrated with Rakuten E-commerce website, powered by Generative AI. This app takes the hassle out of finding the perfect products within your budget through a friendly and logical chat process. Say you're relocating to a new city and need clothes to toiletries. Instead of spending hours browsing through countless websites, you simply chat with RakuAssist. Ask for help, and it will understand what you need, and instantly recommend the best products, all within your specified budget. The best part? You can do all of this in your native language, making the experience smooth and effortless.

But it doesn't stop there. It analyzes each product to check whether the product is counterfeit or not, using the product images, seller history, reviews, description, etc. saving you the hassle to return the item or get duped.

It also suggests the best applicable credit card offers for each product based on your CC information and the seller company location details. So you not only get the best products but also save money with the most suitable deals. And when you find what you need, adding items to your cart is as easy as a tap. No endless scrolling or decision fatigue—just a seamless, personalized shopping journey from start to finish.

We also have an intelligent Credit Cards Points pipeline that suggests the alternative with higher points hence better returns.

Key Features Of The Solution 1. Personalized Recommendations:

Get product suggestions tailored to your exact needs and budget. Chat in natural language to quickly and logically clarify what you need.

Effortless Shopping Experience: From clothing to toiletries, find everything in one place. Add items to your cart with ease, no complicated processes.

Smart Financial Integration: Get suggestions for suitable credit card offers. See which offers apply to each product based on your credit card information and the seller's details.

Scam and deceit prevention: Analyse fake reviews and fake product images Higher trust score for original product

Offline Market Target:

We are targeting the offline market as well. Our pipeline also suggest the essential offline stores for the products you are looking for if are searching for products in case of possible relocation / travel. The essential covers Medical, Grocery, Clothing, Electronics, etc. It also personalizes the offline store suggestions based on the user's personal preferences and budget.

We also suggest credit card usage for offline stores with higher points and better returns if the user's purshase location covers any such offline store with high points and better returns.

Solution Brief:

Our whole pipeline is based on Langgraph. It builds a Directed Acyclic Graph of User's journey in real world. Then it navigates through the graph to provide the best possible recommendations to the user. It also uses the Qdrant API for the product recommendations and the Google Maps API for the offline store recommendations.

For the credit card suggestions, we query a knowledge graph of credit card offers and then suggest the best credit card offers to the user based on the product and the user's credit card information.

For the product review analysis we use the product reviews and the product images to check if the product is original or not.

Our dataset is based on flipkart-2017 database. The kaggle link : https://www.kaggle.com/datasets/atharvjairath/flipkart-ecommerce-dataset (https://www.kaggle.com/datasets/atharvjairath/flipkart-ecommerce-dataset)

API Endpoints and Input/Output:

1. /start-session - POST

   - Input:

```
{
  sesson_id : "123123"(Any random integer)
}
```

   It creates a new session for the user with the given session_id and also instantiates a persistent configuration in langgraph for that session.

   - Output:

```
  {
    "status": "success",
    "thread_id": "123123"
 }
```

2. /chat - POST

   - Input:

```
{
   "sesson_id" : "123123",
   "user_input" : "I am looking for a blue shirt under 1000"
}
```

   It takes the user message and returns the response from the chatbot.

   - Output:

```
  {
    "status":
    "cur_state":
    "text_content":
    "product_list::
    "budget":
    "new_place_req":
 }
```

Here, status is the status of the API call, cur_state is the current state of the chatbot, text_content is the response from the chatbot, product_list is the list of products recommended by the chatbot, budget is the available budget of the user and new_place_req is the dictornary of the new place recommendations.

The `cur_state` can be one of the following: - `Requirement Phase`: The chatbot is in the requirement phase and is asking the user for the requirements. - `clothing` / `electronics` / `grocery` / `medical`: The chatbot is in the product recommendation phase and is recommending products to the user. - `exit`: The chatbot is in the exit phase and is asking the user if they want to continue shopping or not.

The `product_list` is a list of products recommended by the chatbot. Each product in the list is a dictionary with the following keys. - `product_id`: The name of the product. - 'offers': The offers available on the product.

The `new_place_req` is a dictionary of the new place recommendations. Each place in the dictionary is a dictionary with the following keys. - `place_name`: The name of the place. - `grocery`: The grocery store in the place. - `medical`: The medical store in the place. - `restaurant`: Some personalized suggestions for the user.

3. /add-to-cart - POST

   - Input:

```
{
   "sesson_id" : "123123",
   "product_ids" : ["Blue Shirt"]
}
```

It takes the product_id and adds the product to the cart.

   - Output:

```
  {
    "status": "success"
 }
```

4. /get-product-review-scores - POST

   - Input:

```
{
   "product_id" : "0513ab340eced913dce82594bd118ff0",
   "first_level_cat" : "tools_hardware"
}
```

It takes the product_id and first_level_cat and returns the a detailed analysis of the product reviews for last 24 months.

Setup Instructions:

1. Clone the repository

2. Install the required dependencies using the following command:

```
pip install -r requirements.txt
```

3. Set the environment variables in .env file at the root of the project:

```
MONGO_STRING=
MONGO_COL_NAME=
MONGO_REVIEW_COL_NAME=
MONGO_PRODUCT_DATA_COL_NAME="product_data"
MONGO_USER_COL_NAME="user_data"
AWS_ACCESS_KEY=
AWS_SECRET_KEY=
AWS_REGION=
QDRANT_API_KEY=
QDRANT_URL =
GOOGLE_KEY_API=
GEOCODING_KEY_API=
TOGETHER_API= (We used the api versions of the opn source models due to computational constraints)
```

4. Run the following command to start the server:

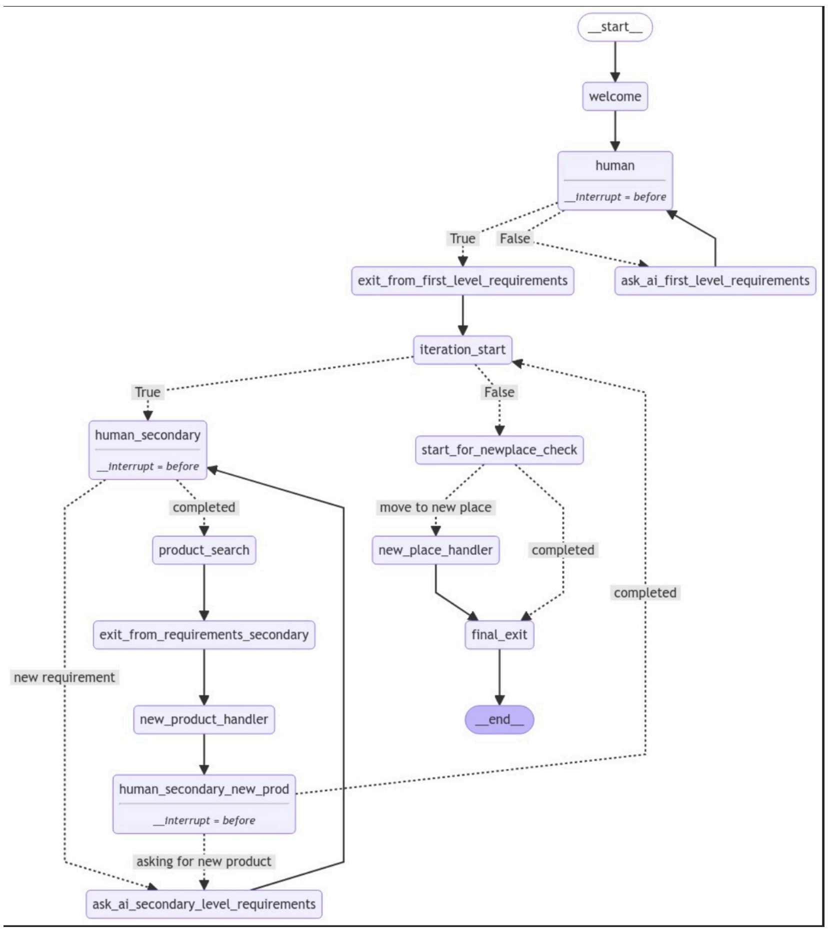
```
cd flask_backend
python3 app.py
```

5. The server will start running at port 8080.

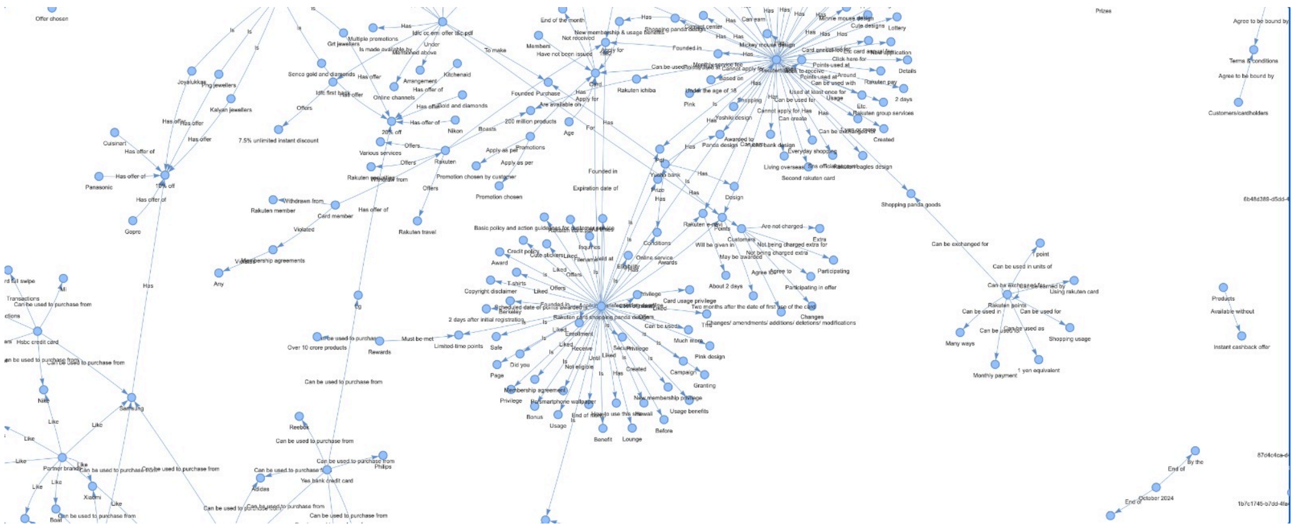
6. The backend is already deployed on AWS and can be accessed using the following link:

```
https://kzur4id4cf.execute-api.ap-south-1.amazonaws.com/
```

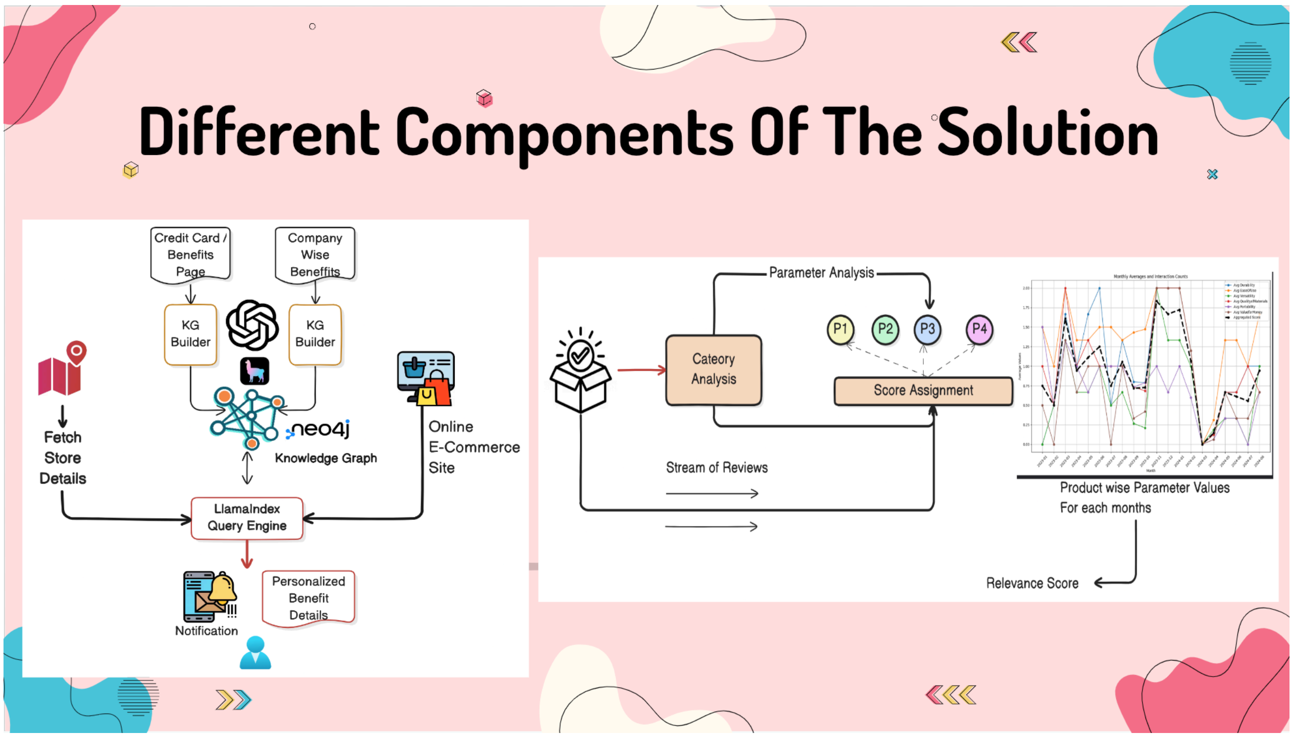
Langgraph Agent



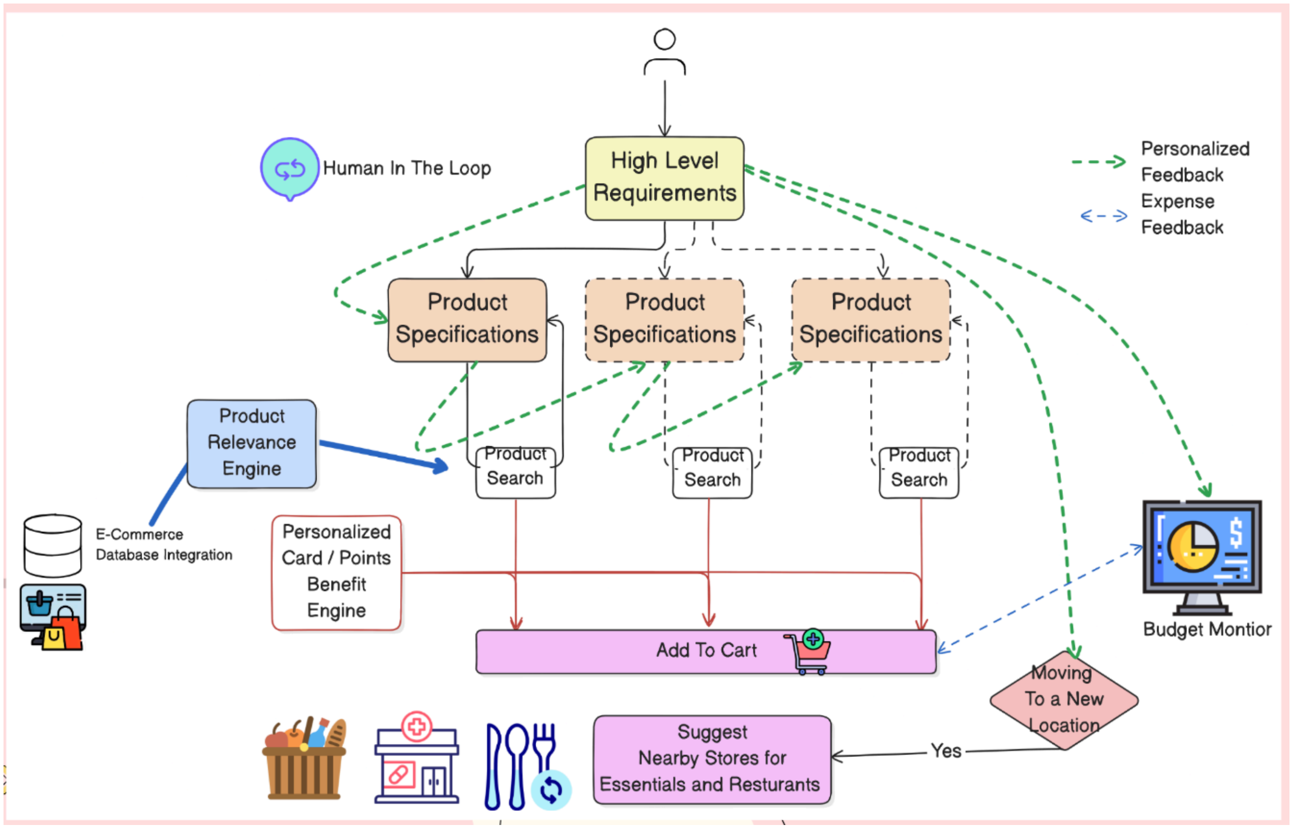
Knowledge Graph of Credit Cards & Product Mapping



Different Components of The Solution



Integrating Different Component Together



Human In The Loop
High Level Requirements
Personalized Feedback
Expense Feedback
Product Specifications
Product Specifications
Product Specifications
Product Relevance Engine
Product Search
Product Search
Product Search
E-Commerce Database Integration
Personalized Card / Points Benefit Engine
Add To Cart
Budget Montior
Moving To a New Location
Yes
Suggest Nearby Stores for Essentials and Resturants