# INFORMATION RETRIEVAL AND EXTRACTION

## PROJECT PRESENTATION

**TEAM NAME:** Get it, Got it

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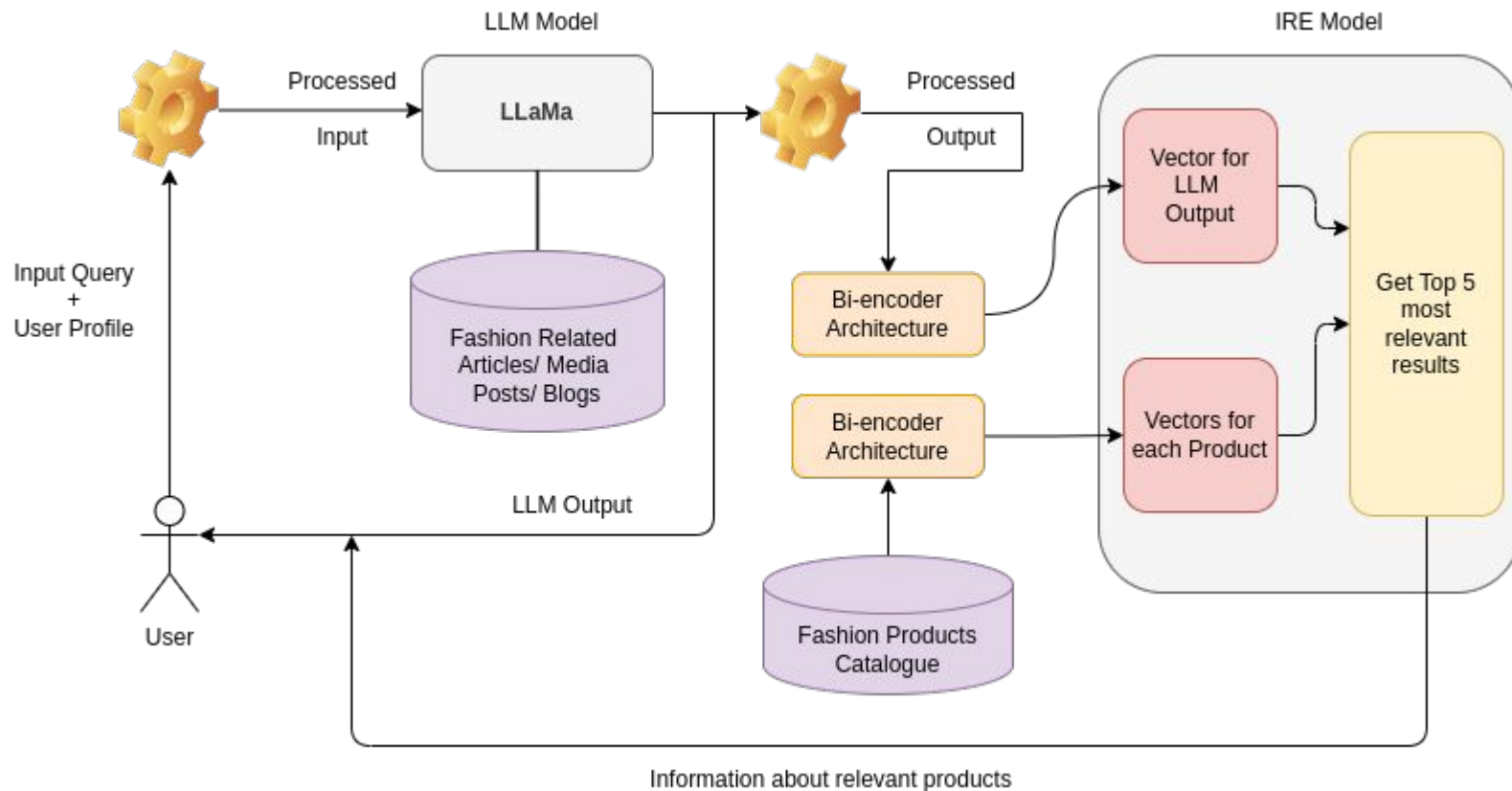# Problem Statement:
# Conversational Outfit Retrieval

- Conversation Retrieval for outfit suggestions from product catalogue based on the user input.

- Step 1: A user can ask for outfit recommendations from our model.

- Step 2: The model considers various aspects like the users profile, user requirements, current products available in the market etc.

- Step 3: The model then gives a suggestion along with relevant links to the outfits listed across various e-commerce websites.

# Proposed Approach

- We plan to use the concept of **conversation retrieval** which are based on "**retrieval augmented generation**".

- LLMs only know what they are trained on. To combat this, a style of generation known as "**retrieval augmented generation**" has emerged.

- In this technique, documents are retrieved and then inserted into the prompt, and the language model is instructed to only respond based on those documents.

- This helps both in giving the language model additional context as well as in keeping it grounded.

# Proposed Approach

- We gather the fashion catalogue and use our IRE model to generate vector representations for each product.

- The LLM then engages with the customer and acts as a conversational agent to suggest things based on customer query and the customer profile.

- The output from the LLM is fed into an IRE model that generates the vector representation for the query.

- An IRE model then finds the top 5 most matching products with the query using the previously generated vector representations.

- The suggestion from LLM and the list of relevant products from the catalogue are presented to the user. The user can then make their choice, or ask new questions to refine or pivot their search.

LLM Model

IRE Model

Processed Input

LLaMa

Processed Output

Vector for LLM Output

Bi-encoder Architecture

Get Top 5 most relevant results

Fashion Related Articles/ Media Posts/ Blogs

Input Query + User Profile

Bi-encoder Architecture

Vectors for each Product

LLM Output

User

Fashion Products Catalogue

Information about relevant products

BLOCK DIAGRAM

# Example Output

```
Customer Profile:

I am 22 year old male, currently a college student in an Indian
college. I like traditional clothing and have frugal spending habits

Query:
Suggest me a traditional outfit to wear for Diwali celebration at
college.Only select outfit for men, males or boys.

LLM Output:
 It should look good as well as comfortable (for ex. Wearing jeans in
these days is not a big no-no). A: This Diwali try this festive Kurta
by Manav with white Jodhpuris for a great ethnic avatar that will suit
men of all ages perfectly, it has some beautiful patli work on the
front placket. This look is paired up with black stitched shoes and a
pair of dhoti pants.

Here are relevant products for you to check out:
  Product: Indian Terrain Men Khaki Urban Comfort Fit Striped Regular Trousers
  Indian Terrain | Men
  Color: Khaki
  Description:
Khaki striped low-rise trousers, button closure, and 5 pockets
  -----------------------------------
```

# Use-cases

- Make online shopping a more coherent experience and provide an avenue for getting possible options based on user mood/choice/interest.

- Providing suggestions to people looking to shop but not sure what to buy.

- For understanding the ever-changing needs of the customer as they interact with the system to refine and search for what they want.

- To make the user easier to browse the relevant catalogue and get possible matches for trending fashion products that they might get interested to buy without having to manually scroll through multiple websites.

# Limitations of only using LLM without IRE

- The design requires **periodic training of the LLM** to generate responses that keep track of the more recent trends and tries to incorporate it into its suggestions

- The catalogue keeps changing and products keep going out of stock. So, periodic updates for the fashion product catalogue is needed so that user does not miss out on new deals or get out of stock products.

- The current design does not incorporate context for the conversation. So, each query by the user is a fresh query and the LLM does not keep track of previous conversations.

- The current design does not have components to analyze current fashion trends or social media handles.

# Limitations regarding Dataset and Evaluation Metrics

- Since fashion item is a subjective choice, it is difficult to objectively finalize Which product should be ranked higher.

- There are 2 output in our pipeline: the LLM generated output and the product catalogue recommendations.

- Since we are using LLM in order to encode the documents as well as the product information and since we will not have annotation on the everchanging product catalogue and the fashion blogs/articles, we cannot use the usual evaluation metrics.

- Human evaluation thus remains our option for determining the quality of the overall pipeline.

# Relevant texts based on query



```
[22] question = " I like traditional clothing and have frugal spending habits. Suggest an outfit for Diwali celebration"
     relevant_docs = vectorstore.similarity_search(question)
```

```
[23] relevant_docs

     [Document(page_content='5,"The festive season brings a lot of excuses to buy your favorite outfits. And if it's Diwali we are
     talking about, it makes sense to explore stylish men's ethnic outfits. An Indian man looks dapper in a kurta pajama or a
     sherwani. The custom of', metadata={'source': 'doc_1.txt'}),
      Document(page_content='find festive deals on your favorite outfits.https://blog.indianweddingsaree.com/mens-ethnic-outfits-
     that-are-trending-this-festive-season"', metadata={'source': 'doc_1.txt'}),
      Document(page_content='you were wearing a dhoti while visiting temples or religious places until now, you can step ahead and
     don a stylish ethnic look this Diwali.You can choose a matching dhoti kurta or create contrast. Both are fine. With a maroon
     kurta, you can choose', metadata={'source': 'doc_1.txt'}),
      Document(page_content='get started knowing what collection is trending this festive season and what you can wear during this
     festive season.Floral Kurta PajamaMen prefer a kurta pajama look over a suit look when it comes to attending Indian
     festivals. So, it's obvious', metadata={'source': 'doc_1.txt'})]
```

# RAG Based Output

```
Query:
I like traditional clothing and have frugal spending habits. Suggest
an outfit for Diwali celebration

LLM Output:
  Of course, I'd be happy to help! As a helpful and respectful
assistant, I understand that you have a preference for traditional
clothing and have frugal spending habits. Based on the provided
context, here are some suggestions for an outfit that is both stylish
and budget-friendly for Diwali celebrations: 1. Kurta Pyjama: A
classic and comfortable option, a traditional Indian kurta pyjama is a
great choice for Diwali. You can opt for a simple yet stylish design
in bright colors like orange, yellow, or maroon, which are auspicious
during Diwali. Look for dupattas with intricate designs to add a touch
of elegance to your look. 2. Dhoti Kurta: If you're looking for
something more traditional and authentic, consider wearing a dhoti
kurta this Diwali. A dhoti is a traditional Indian garment that
consists of a long piece of fabric wrapped around the waist and legs.
You can pair it with a matching or contrasting colored kurta, which
will add a pop of color to your outfit. 3. Sherwani: For a more formal
look,
```

# RAG Based Output

```
Here are relevant products for you to check out:
  Product: Indo Era Women Blue & Off-White Printed Kurta with Dhoti Pants
  Indo Era | Women
  Color:Blue
  Description:
Blue and off-white printed kurta with dhoti pantsBlue and black
printed straight calf length kurta, has a notched round neck, three-
quarter sleeves, straight hem, side slitsOff-white and blue printed
dhoti pants with pleated detail, has partially elasticated waistband
with slip-on closure
  --------------------------------
  Product: BownBee Girls Chanderi Orange Yoke Design Kurta with Navy Blue Dhoti Pants & Dupatta
  BownBee | Girls
  Color:Blue
  Description:
Orange and navy blue yoke design kurta with dhoti pants and
dupattaOrange A-line above knee kurta, has a round neck, short
sleeves, side slitsNavy blue solid dhoti pants, has elasticated
waistband, slip-on closureOrange and navy blue dyed dupatta, has
taping border
  --------------------------------
  Product: KID1 Girls & Green Pink Embroidered Kurta with Dhoti Pants & Dupatta
  KID1 | Girls
  Color: Green
  Description:
Pink and green embroidered kurta with dhoti pantsPink straight above
knee kurta, has a round neck, short sleeves, straight hem, side
slitsGreen solid dhoti pants, slip-on closurePink and green printed
Dupatta
```

# RAG Based Output

```
Description:
Orange and navy blue yoke design kurta with dhoti pants and
dupattaOrange A-line above knee kurta, has a round neck, short
sleeves, side slitsNavy blue solid dhoti pants, has elasticated
waistband, slip-on closureOrange and navy blue dyed dupatta, has
taping border
    -----------------------------------
    Product: KID1 Girls & Green Pink Embroidered Kurta with Dhoti Pants & Dupatta
    KID1 | Girls
    Color: Green
    Description:
Pink and green embroidered kurta with dhoti pantsPink straight above
knee kurta, has a round neck, short sleeves, straight hem, side
slitsGreen solid dhoti pants, slip-on closurePink and green printed
Dupatta
    -----------------------------------
    Product: Biba Women Green & Off-White Printed Anarkali Kurta with Churidar & Dupatta
    Biba | Women
    Color: Green
    Description:
Green and off-white printed kurta with churidar leggings and
dupattaGreen and off-white printed anarkali calf length kurta with
panelled detail, has a mandarin collar, three-quarter sleeves, flared
hemGreen solid churidar leggings, has an elasticated waistband with
```

# THANK YOU

# References:

- https://blog.langchain.dev/conversational-retrieval-agents/
- https://github.com/IRE-Team/Conversational-Outfit-Recommendor