

AIgnite

Link to repo: https://github.com/Hemanth-2706/Appian_Hackathon

Presented by Team HSM

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appian X AI CLUB IITM

HSM ShopSmarter

Search for products...

Search

Search with Photo

Electronics

Fashion

Home & Kitchen

Books & Media

SmartBot

Hey there! I'm your personal shopping
assistant 🛍️
I'll help you find the perfect style match!

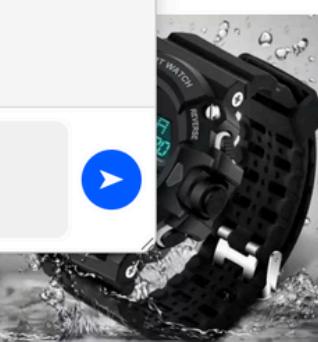
Upload a photo or describe what you're
looking for, and
I'll find the best options for you in a snap! 📸✨

Upload Photo

Type a message...



Featured Products



Fastrack Smartwatch



OVERVIEW

AI SOLUTION

USABILITY N IMPACT

TESTING

PROBLEM STATEMENT AND SOLUTION SUMMARY

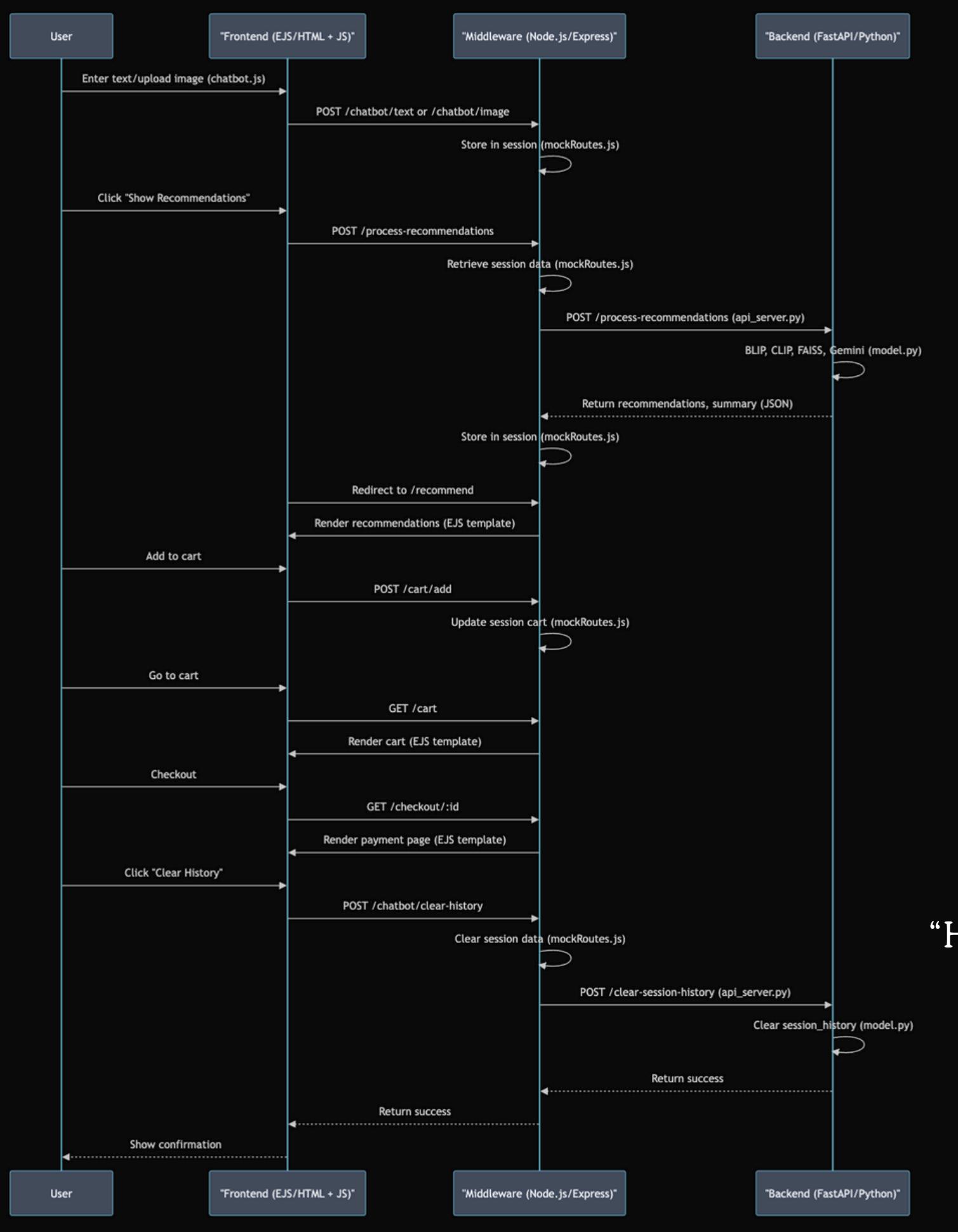
Problem Statement : Improve online shopping experience

- Being able to find a product match to any user requested product in an e-commerce platform.
- Get personalized recommendations for complementary products
- Simplify checkout process

Solution : HSM Shopsmarter

1. A similarity search based “similar product” feature to help user find similar products on the e-commerce platform.
2. Short term user summary based recommended complementary products.
3. A chatbot to help user find relevant product. Our chatbot speaks!
4. Simplified checkout process.

PIPELINE



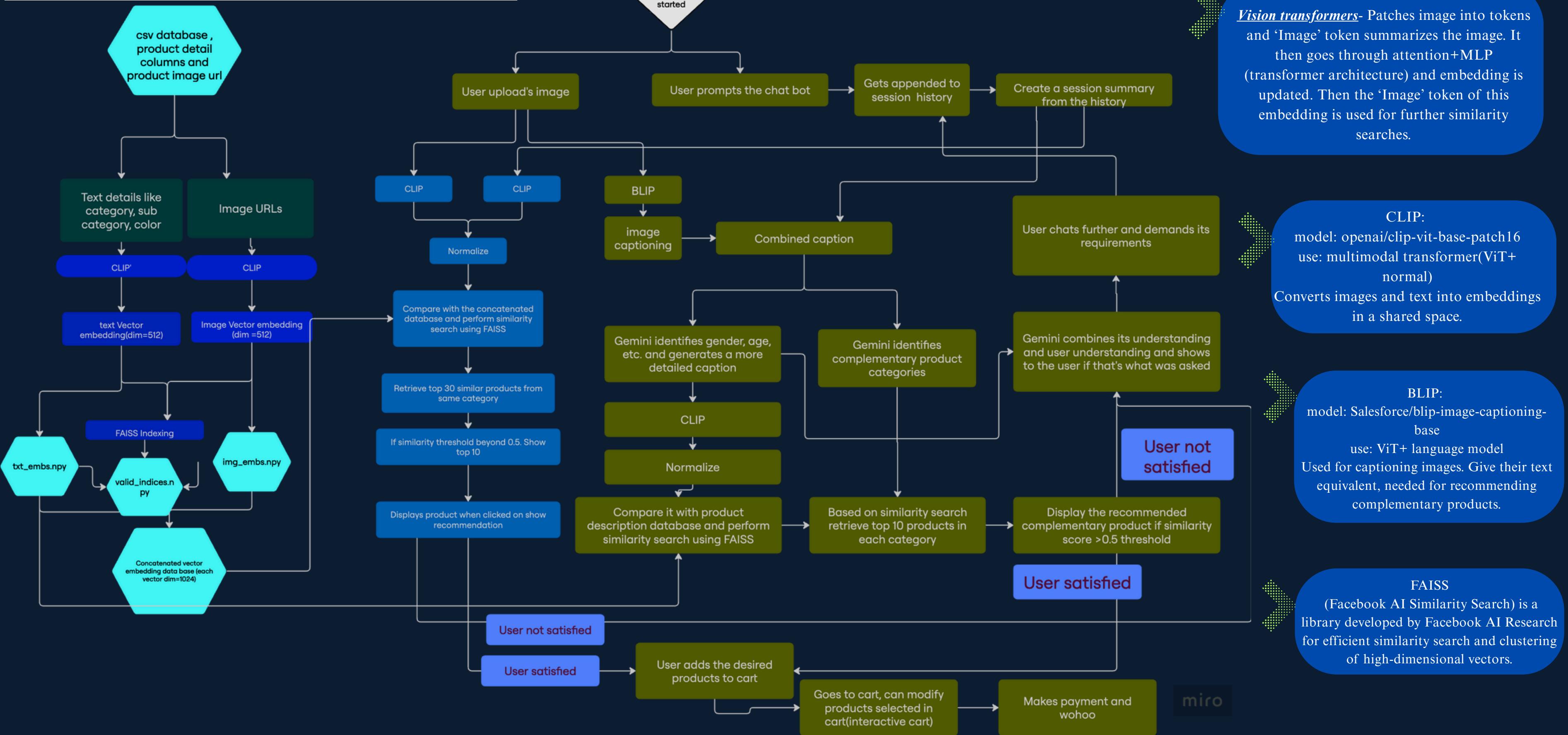
Layer	Language/Frameworks	Key Modules/Models	Main Role/Functionality
Frontend	HTML, CSS, JS, EJS	chatbot.js, EJS templates	UI, user input, AJAX, rendering
Middleware	, Express	express, axios, express-session	Routing, session, API gateway
Backend	Python, FastAPI Node js	fastapi, pandas, faiss, transformers	ML pipeline, recommendations
ML Models	ViT, LLM, FAISS	CLIP, BLIP, Gemini, FAISS	Embedding, captioning, LLM, search

Main recommender system: The core idea is to convert multimodal user inputs and products in e-commerce database into 512 dimension vectors via Vision transformers and index them using FAISS. Then we perform a similarity search between the user input and e-commerce products and suggest user products by an LLM's assistance. (Gemini 1.5 pro in this case)

As an example, we embedded this into our own small scale e-commerce platform “HSM ShopSmarter”. We have used embedded javascript for the front end, Express and axios as middle ware and FastAPI for backend.

We further enhanced user experience beyond recommendation system on our e-commerce platform, by providing a chat-bot which speaks. We also simplified the checkout process of the user.

MODEL ARCHITECTURE



OVERVIEW

AI SOLUTION

USABILITY N IMPACT

TESTING

miro

ROUND 3 ENHANCEMENTS

1. Fixed and enhanced UI.
2. Automated cart checkout, interactive cart.
3. Added session summary and history for more personalized results. Made the chatbot more agentic.
4. Increased e-commerce database from 10k embeddings to 40k embeddings
5. The model categorizes input according to requested item category of user.(enhanced model pipeline)
6. Also identifies user characters like gender, age, etc. according to the conversion.
7. Improved logging in backend. More modular code.
8. Easier setup for macOS and Windows using start_servers.bat(/zsh)
9. Our chatbot speaks!!

1. & 2.

- UI was not displaying images and category for recommendation.ejs page.
- Now, all the functions on all pages including product.ejs, recommendation.ejs and home.ejs.
- Interactive cart and automated checkout providing improved user experience.

5. & 6.

- Earlier, FAISS was doing similarity search over complete database.
- Now we first categorize and sub-categorize the input and then perform similarity search.
- This not only reduces search time and computation but also provides more accurate result.
- Similarly, identification and classification on user characters like gender, followed by categorization.

3.

- Session history and session summary, enables user to converse with the recommendation system.
- The llm mediates user inputs to the recommender.
- Adds personalization to the recommender system.

4.

Increasing the database, helped us getting better test results on a small scale.

9.

- Our chatbot “replies” the summary of what it understood, and what product the platform has and how to make a perfect outfit!
- We could not implement audio assistance to complete website, but it represents our basic idea.
- Modules used:

7. & 8.

- The improved logging system will come handy when implementing our recommender system to any other e-commerce platform.
- Logs everything to terminal, right from loading model to initialization of any function in any file.
- The front end and back end server setup simplified by just one file instead of bashing some 10 -20 commands in command line

USABILITY AND IMPACT

The idea is to bring online-shopping experience closer to in-person shopping and at the same time leverage the massive amount of data, ease and feasibility that online shopping provides.



- The chatbot acts like a sales person, understands the user requests, and conveys them to the recommender system.
- The recommender system looks all over the shop in just a couple of seconds and suggests the most similar products and also recommends complementary products- giving a perfect outfit like a stylist.
- Then the interactive cart and checkout process acts like the billing counter, also giving space for last minute cancellations and additions.



- Now, our ultra-fast sales person and fashion stylist is modular and integrable/detachable easily to any other e-commerce platform. To showcase this, we have deployed it in a real server coded in Embedded javascript, Node.js, etc. unlike low-flexibility frameworks like Streamlit.



- Another impact which we had love to make:
Scale this recommender system, not just on one platform, but across the internet, to find the exact product customer wants!



- Our major focus has been on understanding the user and improving user experience in online shopping.
- The recommender system aligns to this.
- What we plan to improve is the “fashion stylist” by using Graphical neural networks to capture the shopping behaviour and choices of various users on the platform, categorized by their demographics.

IDEAS FOR FUTURE IMPLEMENTATION

»»» If we were to implement this in real life-

»»» Currently, the session summary is diluting image to text for recommendation (which also makes sense), whereas concatenating textual session summary and image embedding for similar product using CLIP. While CLIP is a good model, we would want to fine-tune the image embedding through “FiLMing”(Feature wise Linear Modulation) on text embedding, for better results. “Conditioning the text embeddings on image embeddings”.

»»» For our purpose, we have used Gemini 1.5 pro.

- We would have to fine tune the llm on the respective e-commerce platform tasks.
- We would also have to fine-tune the models used for getting embeddings to get more “product-specific” embeddings compared to a general “internet-wide” meaning embedding.

»»» Personalized Gifting solutions : We plan to implement AI powered gifting solution that offers a stream-lined and efficient way to find the perfect gifts by analyzing recipient preferences and situation specific needs.

»»»

Further, we also plan to capture user behaviour using long term memory. Each session summary embedding will be logged and we will try to find user attributes by relating various session histories. We would want something similar to “CLS” token in BERT, for a session instead of sequence.

»»»

Then these user attributes will help us also cluster and classify users, which when plugged into gnns, will help us design our “fashion stylist.”

»»»

RAG Based Interactive Chatbot on reviews and feedbacks collected: This will answer user queries regarding the product feedbacks based on other user reviews. This can also be used to give impactful feedbacks to the manufacturers

ROUND 2 TESTS

Welcome | Fashion Recommendations

Search _Upload

Similar Items **Complementary Items**

Upload Image



Choose Image

Describe What You're Looking For

how me some shoes that would go well with this Jersey

Find Recommendations **Clear**

Chat with your AI Stylist

Type your message he... **Send**

 ID: 15349 Sports Nike Men Blue Team India Cricket Jersey	 ID: 3731 Sports CSK Mens Premium Jersey
 ID: 4124 Sports Kochi Tuskers Kids Replica Jersey	 ID: 14001 Sports Nike Men Solid Navy Blue Jerseys
 ID: 2274 Sports Nike Mens AS White T-shirt	 ID: 10602 Sports Nike Men Football Soccer Red Jerseys
 ID: 4125 Sports Lotto Men Kochi Tuskers Authentic Orange Jersey	

Search _Upload

Upload Image



Choose Image

Describe What You're Looking For

E.g., 'blue casual shirt for summer' or 'elegant evening dress'

Find Recommendations **Clear**

Chat with your AI Stylist

Type your message he... **Send**

 ID: 26536 Casual ID Men White Shoes	 ID: 54516 Sports F Sports Men White Velocity Sports Shoes
 ID: 13073 Casual Numero Uno Men White Shoes	 ID: 30233 Casual Numero Uno Men White Shoes
 ID: 11517 Casual Catwalk Women Lifestyle White Shoes	 ID: 20895 Casual Basics Men Orange Casual Shoes
 ID: 26539 Casual ID Men White & Black Shoes	

OVERVIEW

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ROUND 3 TESTS

Similar Products

Recommended Products

Suggest some watches like this

• Okay, so from the image, I saw a few cool watches with a black and green color scheme, some digital displays, and maybe even a bit of a water-resistant vibe. I definitely picked up on keywords like "black watch," "green watch," and even just plain "watch!"

• Based on that, I found some similar watches for you to check out. I think the Maxima Men Multifunction Watch, the Maxima Men Digital Watch, and the Q&Q Men Black Watch might be up your alley. These have that casual, sporty feel.

• I also wanted to throw in some complementary watches that you might like. These are also from Maxima and include a few different styles like the

Type a message...
Upload Photo
Smart Search Clear History

Similar products

Complimentary products

Identified several watches of the same kind

ROUND 3 TESTS

Similar Products

- Lucera Silver Ring**
Accessories > Jewellery
Ring | Women
Color: Silver
Season: Summer
Usage: Casual
₹1586.00
- Lencia Sterling Silver Ring**
Accessories > Jewellery
Ring | Women
Color: Silver
Season: Fall
Usage: Casual
₹2123.00
- Revv Men Steel Ring**
Accessories > Jewellery
Ring | Men
Color: Steel
Season: Summer
Usage: Casual
₹2608.00
- nan**
Personal Care > Fragrance
Perfume and Body Mist | Men
Color: nan
Season: Spring
Usage: nan
₹1310.00
- Reverie Silver Ring**
Accessories > Jewellery
Ring | Women
Color: Silver
Season: Fall
Usage: Casual
₹1705.00
- Lucera Silver Ring**
Accessories > Jewellery
Ring | Women
Color: Silver
Season: Summer
Usage: Casual
₹195.00

Recommended Products

- Pitaraa Silver Omelette Thi...**
Accessories > Jewellery
Bracelet | Women
Color: Silver
Season: Winter
Usage: Casual
₹3363.00
- Lucera Gold Plated Ring**
Accessories > Jewellery
Ring | Women
Color: Gold
Season: Summer
Usage: Casual
₹1312.00
- Ice Unisex Sili Blue Watch**
Accessories > Watches
Watches | Unisex
Color: Blue
Season: Winter
Usage: Casual
₹2795.00
- Pitaraa Golden Necklace**
Accessories > Jewellery
Necklace and Chains | Women
Color: Gold
Season: Fall
Usage: Casual
₹295.00
- Lucera Gold Plated Bangle**
Accessories > Jewellery
Bangle | Women
Color: Gold
Season: Summer
Usage: Casual
₹887.00
- Lucera Gold Plated Bangle**
Accessories > Jewellery
Bangle | Women
Color: Gold
Season: Summer
Usage: Casual
₹70.00

SmartBot

Show me some bracelets and rings for this hand

- Okay, so I see a hand holding a bubble with a cool reflection of the sky and a cloud inside – very ethereal! You're looking for bracelet and ring options for this hand, right?
- I found some rings that I think would look great: a Reverie Silver Ring, a Lencia Sterling Silver Ring, and a Revv Men's Steel Ring. These offer a few different styles so hopefully one catches your eye.
- To complement the rings, I also pulled a few other pieces: a Pitaraa Golden Necklace (a little something extra!), a Lucera Gold Plated Ring, another Lencia Sterling Silver Ring (always good to have options!), a Pitaraa Silver Omelette Thin Bracelet (love the name!), and a Lucera Gold Plated Bangle.
- Is this along the lines of what you were looking for? Let me know if you'd like to see anything else!

Type a message...

Upload Photo

Similar products

Complimentary products

ROUND 3 TESTS

Similar Products

Product Image	Product Name	Category	Color	Season	Usage	Price
	French Connection Women ...	Accessories > Bags	Black	Summer	Casual	₹2340.00
	Spice Art Women Black Ha...	Accessories > Bags	Black	Winter	Casual	₹1968.00
	Pieces Women Black Handb...	Accessories > Bags	Black	Winter	Casual	₹720.00
	Murcia Women Black Hand...	Accessories > Bags	Black	Winter	Casual	₹236.00
	Mod'acc Women Black Han...	Accessories > Bags	Black	Summer	Casual	₹2238.00

SmartBot

Show me similar handbags to this one

Hey there! So I took a look at the picture of your gorgeous black leather handbag and did some searching for you.

- I noticed it's a black leather handbag with gold hardware and a shoulder strap, right? Sounds chic!
- Based on that, I found a few very similar handbags: the Murcia Black Handbag, the Murcia Women With Stitch Black Bag, and another great option from Pieces. They all have that same kind of sleek, classic look.
- To complete the look, I also picked out some complementary items that would go perfectly with your new bag. Think a black top (from AND), some black shoes (both casual options from Catwalk), and even a little black dress (also AND) - always a winner!
- I also found another black handbag from Pieces, in case you wanted more choices within the same style. So, what do you think? Did I find what you were looking for? Let me know if you'd like to explore other options or have any other questions!

Type a message...

Smart Search Clear History

Similar products

productDisplayName

Product Image	Product Name	Category	Color	Season	Usage	Price
	Catwalk Black Casual Shoes	Footwear > Shoes	Black	Winter	Casual	₹2617.00
	Pitaraa Golden Necklace	Accessories > Jewellery	Gold	Fall	Casual	₹295.00
	AND Women Solid Black Tops	Apparel > Topwear	Black	Fall	Casual	₹1351.00
	Murcia Black Handbag	Accessories > Bags	Black	Winter	Casual	₹2917.00
	AND Women Solid Black Dr...	Apparel > Dress	Black	Fall	Casual	₹2405.00

SmartBot

Show me similar handbags to this one

Hey there! So I took a look at the picture of your gorgeous black leather handbag and did some searching for you.

- I noticed it's a black leather handbag with gold hardware and a shoulder strap, right? Sounds chic!
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- I also found another black handbag from Pieces, in case you wanted more choices within the same style. So, what do you think? Did I find what you were looking for? Let me know if you'd like to explore other options or have any other questions!

Type a message...

Smart Search Clear History

Complimentary products

ROUND 3 TESTS

SmartBot Message:

Show me some good sarees for my mother

Hi there! So I looked for some sarees for your Mom and this is what I found:

- I found a few listings for a "Prafful Women Multi Coloured Sari". It seems to be a popular choice! I've listed it multiple times because it came up as a top result. Are you familiar with this brand? Perhaps we could look at other multi-coloured options if you'd prefer?
- To complement the saree, I also picked out a few other items that might be nice: a red handbag, golden heels, and a red dress (just in case she wants a different outfit altogether). I also thought a red salwar kameez and dupatta would be a nice alternative if a saree isn't quite what you had in mind.

Let me know if this is along the lines of what you were hoping for! If not, we can definitely refine the search. Tell me a little more about your mom's style preferences (colours, patterns, occasion, etc.) and I can help you find something perfect.

SmartBot Interface:

- Upload Photo
- Type a message...
- Smart Search
- Clear History

SmartBot Message:

show me some birthday gifts for my father

Hey there! So I looked for some birthday gift ideas for your dad, and here's what I came up with:

- I noticed you mentioned a preference for casual styles. That's a great starting point!
- I found some items fitting that description, although some details were missing from the initial search results (I'll need a bit more info to get you perfectly matched gifts).
- For shoes, I found some options: The "Numero Uno Men Fashion Black Sports Shoes" (if he's into sporty casual) and a couple of "Black and Brown Casual Shoes".
- To complement the shoes, I also pulled up a couple of belts: a "brown belt" which is always a classic, and another "men's brown belt" to give you more choices.
- It looks like I need a little more information from you to give the best recommendations. What kind of casual style is your dad into (e.g., sporty, classic, outdoorsy)? Knowing this will help me narrow down the search!

Let me know if this is along the lines of what you were

SmartBot Interface:

- Upload Photo
- Type a message...
- Smart Search
- Clear History

It gave age and gender specific products for both the prompts.

*Thank
You!*