



# MULTIMODAL RAG-BASED

## Product Recomendation System



# OUR TEAM



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# CONTENTS



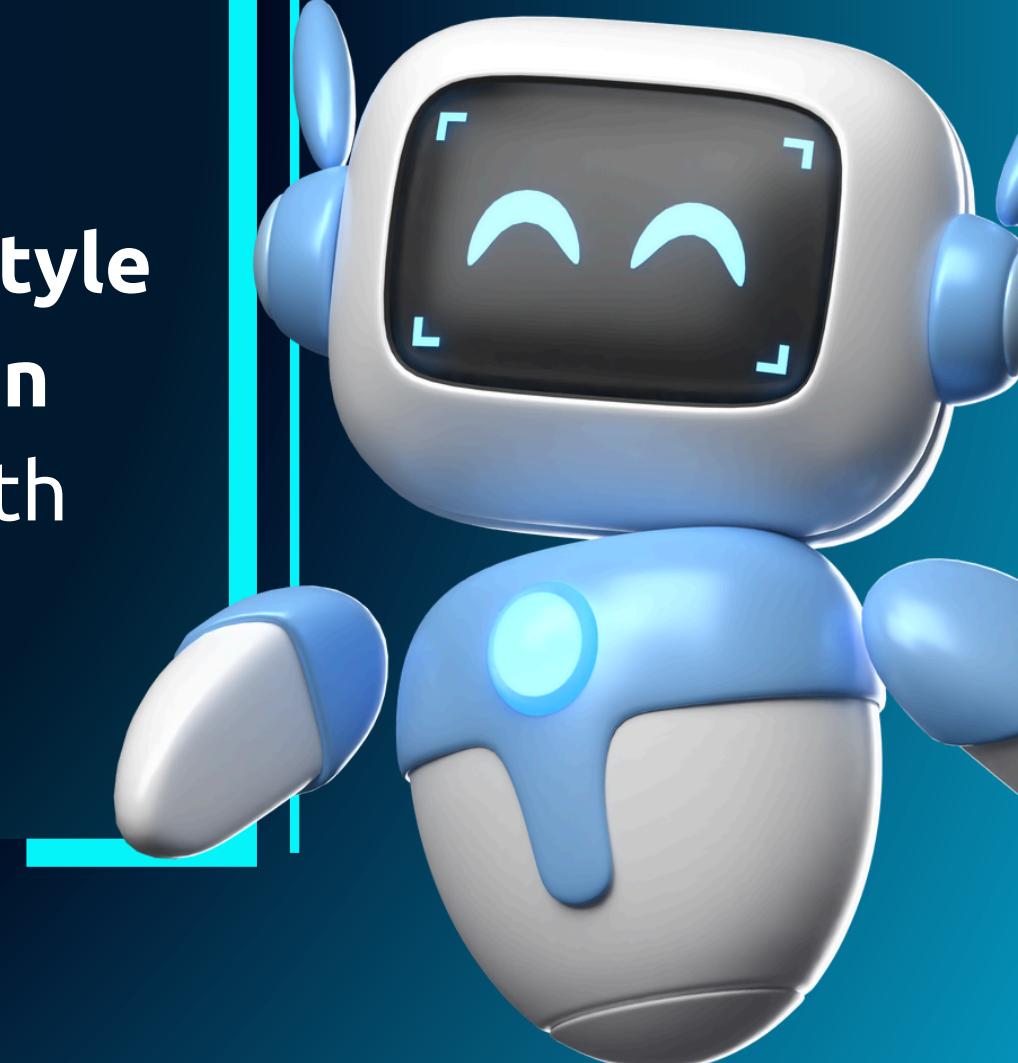
- ① Problem Statement
- ② Solution
- ③ System Features
- ④ User Interfaces
- ⑤ System Design & Architecture
- ⑥ Our Contribution
- ⑦ Conclusion & Future Work

1

# PROBLEM STATEMENT

Many individuals struggle to find outfits that match their personal style **preferences**, while the fashion industry faces challenges in providing **personalized, trend-aware** recommendations.

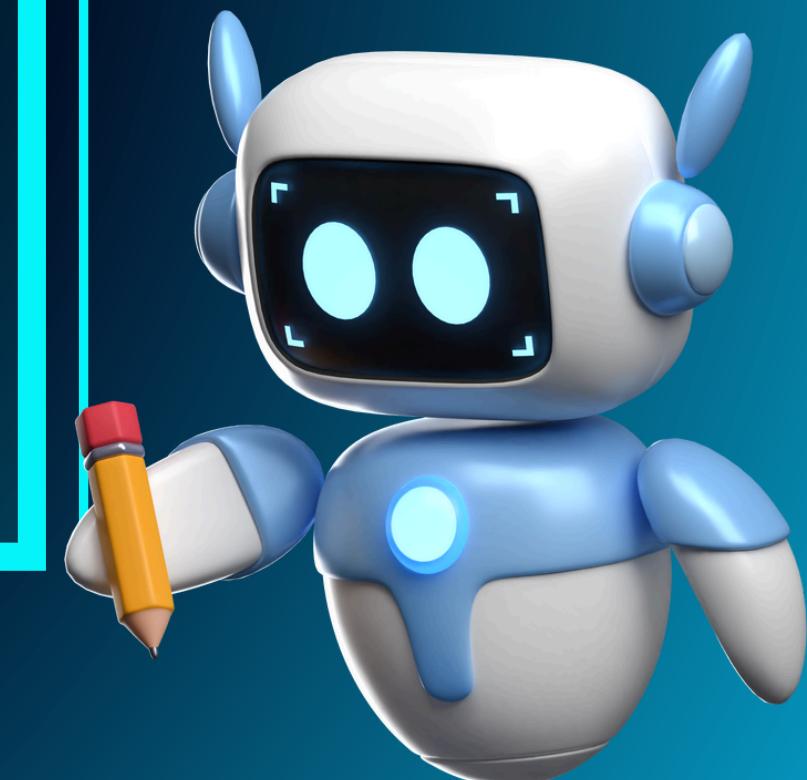
Traditional fashion search tools cannot understand **personal style** or allow users to express **preferences** and **visualize products on themselves**. Without **virtual try-on** options, users often buy with **uncertainty**, leading to poor fit and style mismatches.





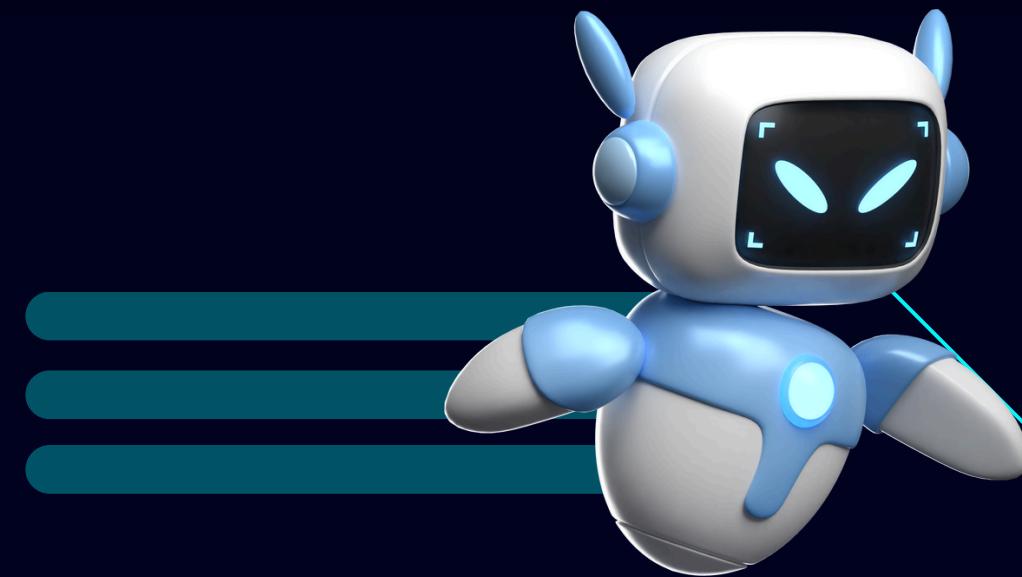
# PROBLEM STATEMENT- LIMITATIONS OF EXISTING SYSTEMS

- Lack of chatbots to understand user needs/wants
- Major clothing brands often offer only basic text search
- No image-based search → hard to find visually similar items
- No virtual try-on → leads to poor fit & increased returns
- Time-consuming to browse multiple sites for similar clothing
- Inspiration (like seeing a dress on the street) often ends in frustration due to a lack of matching tools





I CANNOT FIND WHAT TO WEAR



I DON'T HAVE TIME OR THE  
INSPIRATION TO CREATE AN OUTFIT



OUR  
SOLUTION...



# MULTIMODAL RAG-BASED PRODUCT RECOMMENDATION SYSTEM

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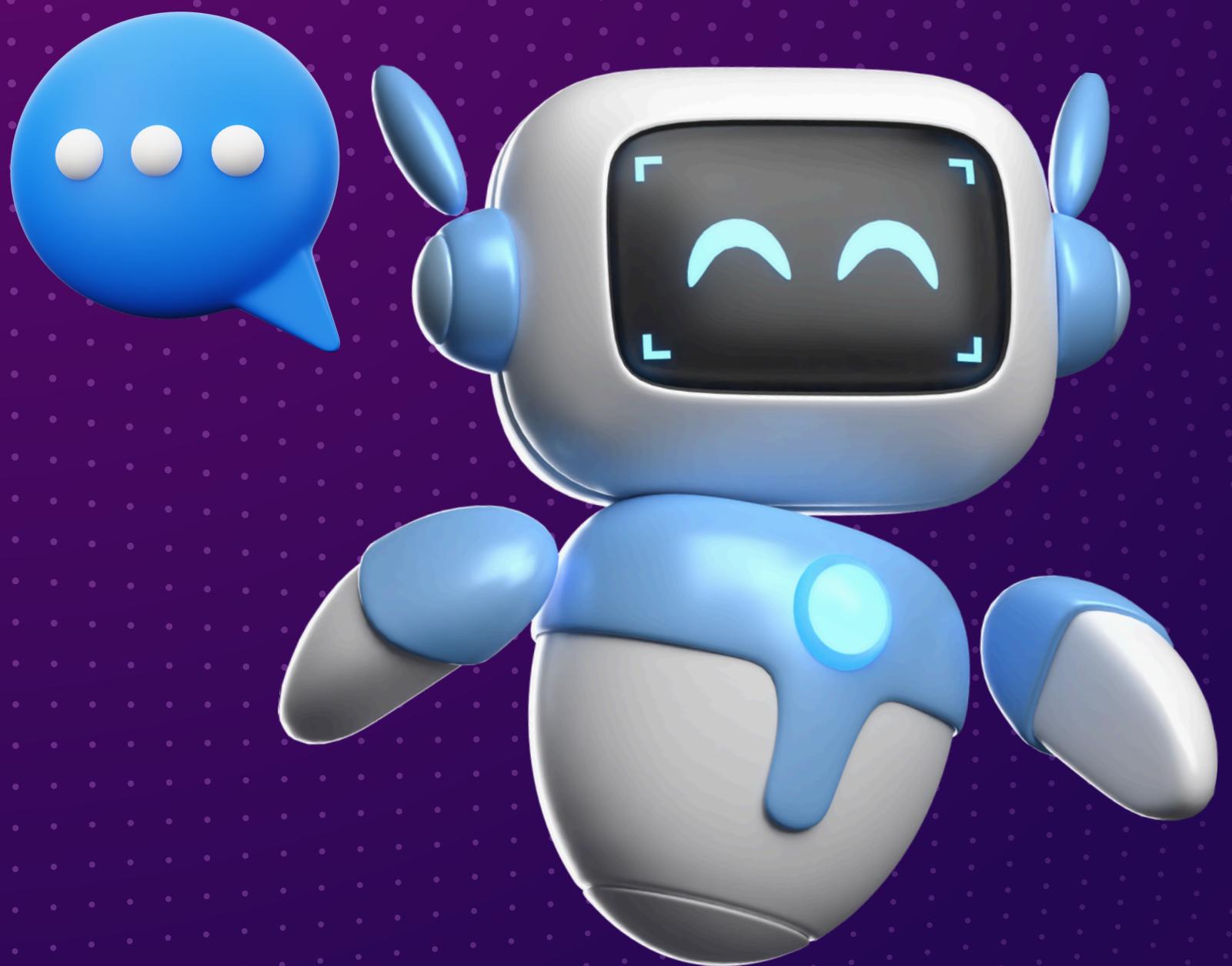
## SOLUTION

### MULTIMODAL RAG-BASED PRODUCT RECOMMENDATION SYSTEM

- AI-Powered Fashion Chat
  - Virtual Try-On System
  - Style Analysis and Preferences
  - Multimodal Product Search
  - Fashion Trend Analysis
- Responsive Website
  - Dashboard Interface
  - Vector Database Integration
  - Profile and Preferences Management

3

# SYSTEM FEATURES



AI POWERED FASHION  
CHATBOT

MULTIMODAL  
RECOMMENDATIONS AND  
PRODUCT SEARCH

STYLE ANALYSIS & PERSONAL  
PREFERENCES

REAL TIME FASHION  
TRENDS

VIRTUAL TRY-ON  
SYSTEM

4

# INTERFACES - DASHBOARD AND TRENDS

AI-POWERED STYLE ASSISTANT

## Discover Your Perfect Style Match

Let our innovative AI technology guide you to find the perfect fashion pieces that match your style, preferences, and the latest trends.

[Get Personalized Recommendations →](#)

[Explore Trends](#)

[Start chatting with AI for recommendations!](#)

### Find Your Perfect Style

### Latest Fashion Trends

Patrick Ta to Receive WWD's International Beauty Innovator of the Year

Ryma Chikhouné | May 21, 2025 | Source: WWD

[Read article](#)

Implementing AI in the Beauty Category to Scale With Speed

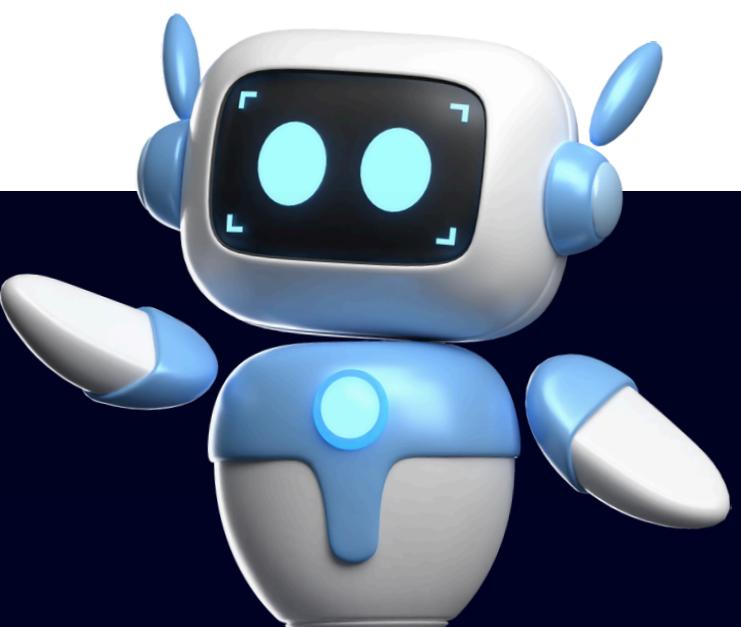
Emily Burns | May 21, 2025 | Source: WWD

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Dior Welcomes 'Positive Conclusion' of Italian Probe

Miles Socha | May 21, 2025 | Source: WWD

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4

# INTERFACES - PREFERENCES

[Back to Profile](#)

## Fashion Preferences

Select the fashion categories you're interested in to personalize your experience.

### Clothing Items

Dress, Jacket, Jeans, Skirt, Hoodie, T-shirt, Sneakers, Boots, Blazer, Coat, Jumpsuit, Crop Top

### Styles

Casual, Formal, Sporty, Streetwear, Chic, Boho, Minimalist, Vintage, Y2K, Preppy, Grunge

### Colors

Black, White, Beige, Pastel, Red, Emerald Green, Navy Blue, Neon, Earth Tones, Monochrome

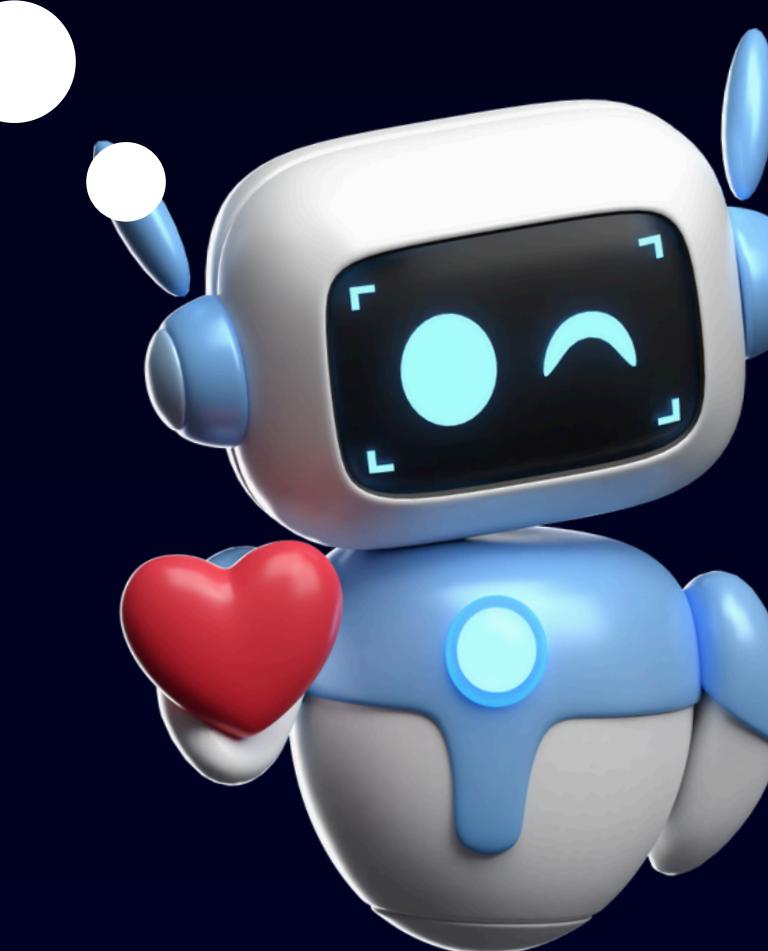
### Seasons

Summer, Winter, Spring, Fall, Rainwear, Beachwear, Layering

### Materials

Denim, Cotton, Wool, Silk, Linen, Leather, Faux Fur, Knit

WHATEVER YOU LIKE

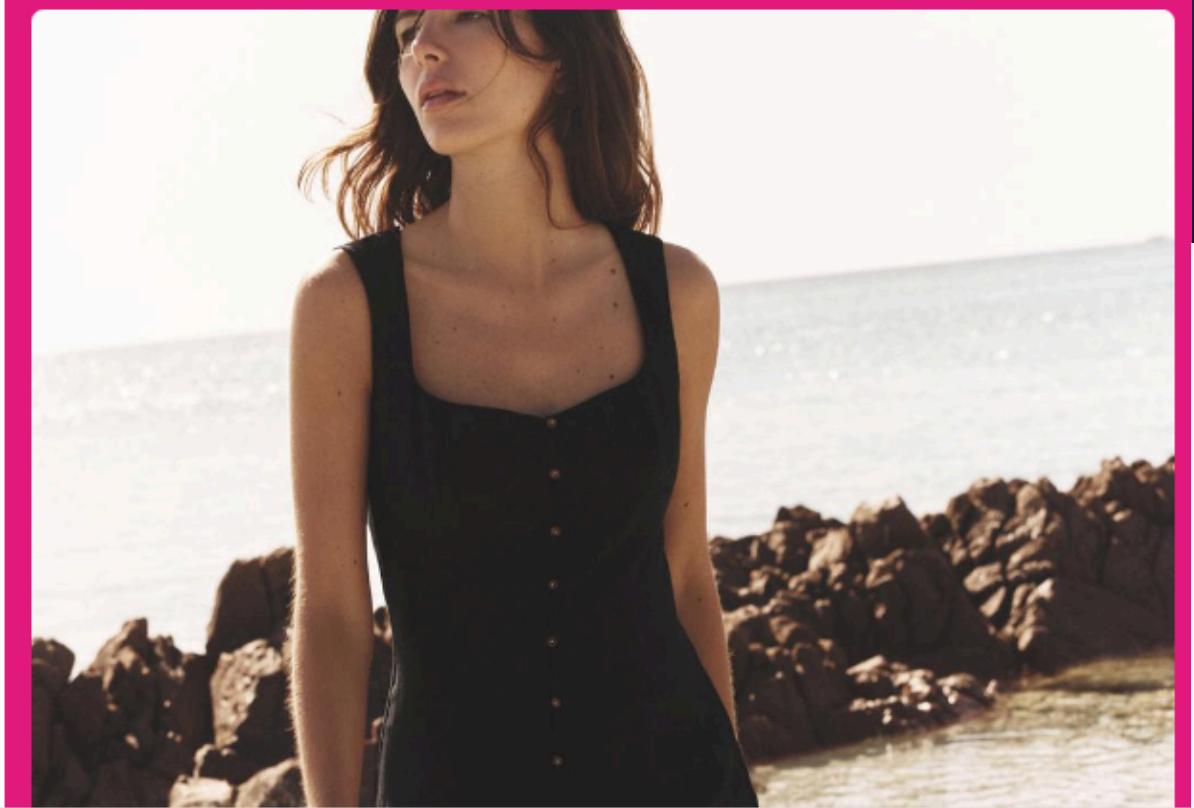


4

# INTERFACES - MULTIMODAL RECOMMENDATION



Recommend a party dress similar to the one in this image.

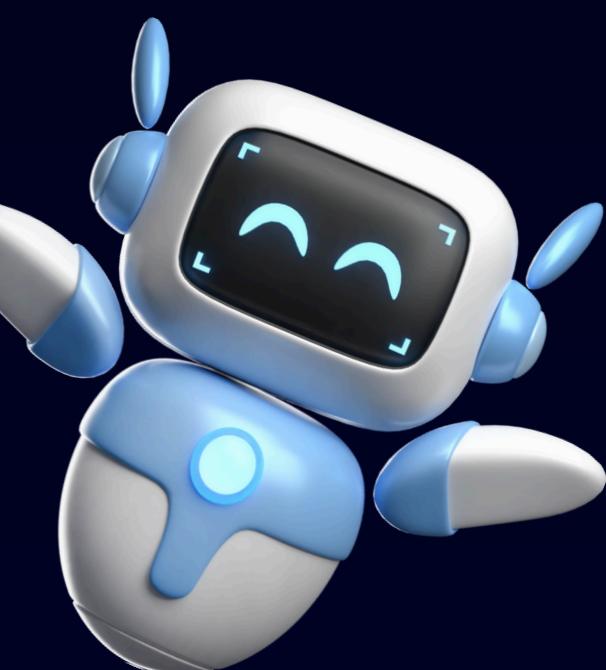
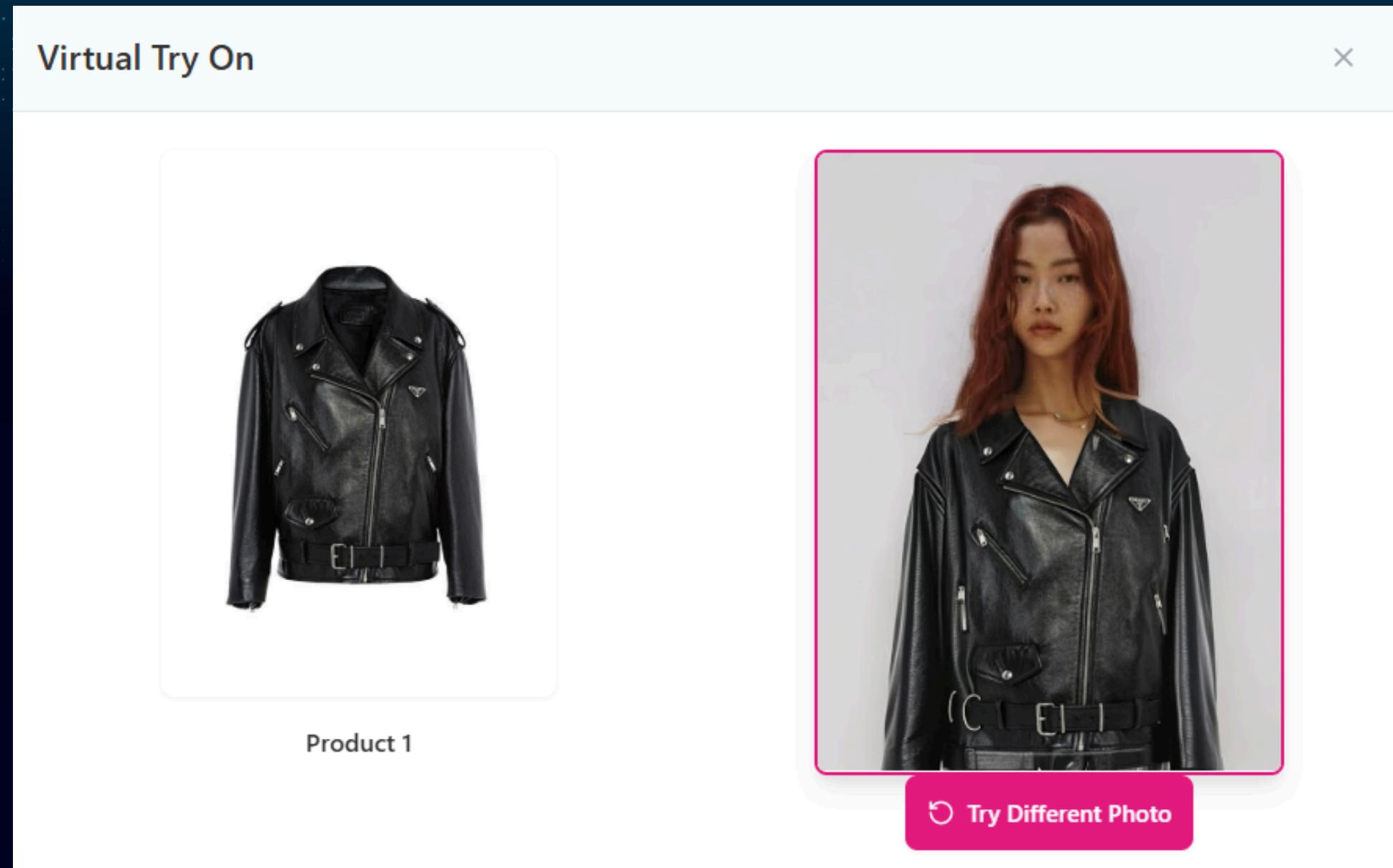


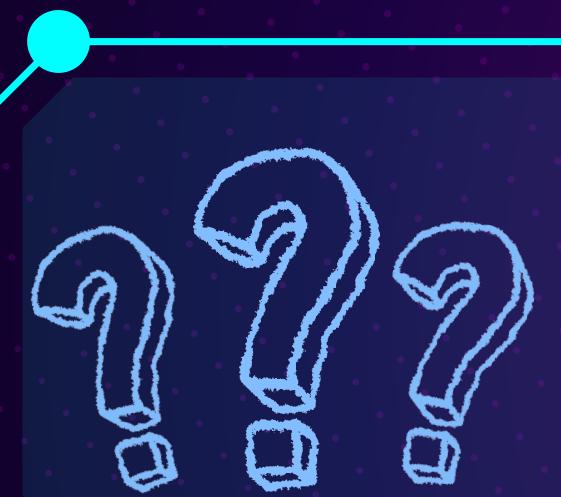
Okay, I can help you with that! I understand you're looking for a party dress similar to the one in the image. While I don't have the exact same dress, I can recommend some stylish alternatives that would be perfect for a party! Let's see what we have: \* **Maison Kairos Goldy Sequined Evening Blouse**: This sequined blouse is super sparkly and eye-catching! Sequins are always a great choice for a party. Image URL: Link: [https://www.beymen.com/en/p\\_maison-kairos-goldy-sequined-evening-blouse\\_1550419](https://www.beymen.com/en/p_maison-kairos-goldy-sequined-evening-blouse_1550419) \* **AllSaints Nat Black Ruffled Dress**: This black ruffled dress is super elegant and a great alternative if you want to stand out. Image URL: Link: [https://www.beymen.com/en/p\\_all saints-nat-black-ruffled-dress\\_1673939](https://www.beymen.com/en/p_all saints-nat-black-ruffled-dress_1673939) Have fun at the party!



4

## INTERFACES - TRY ON



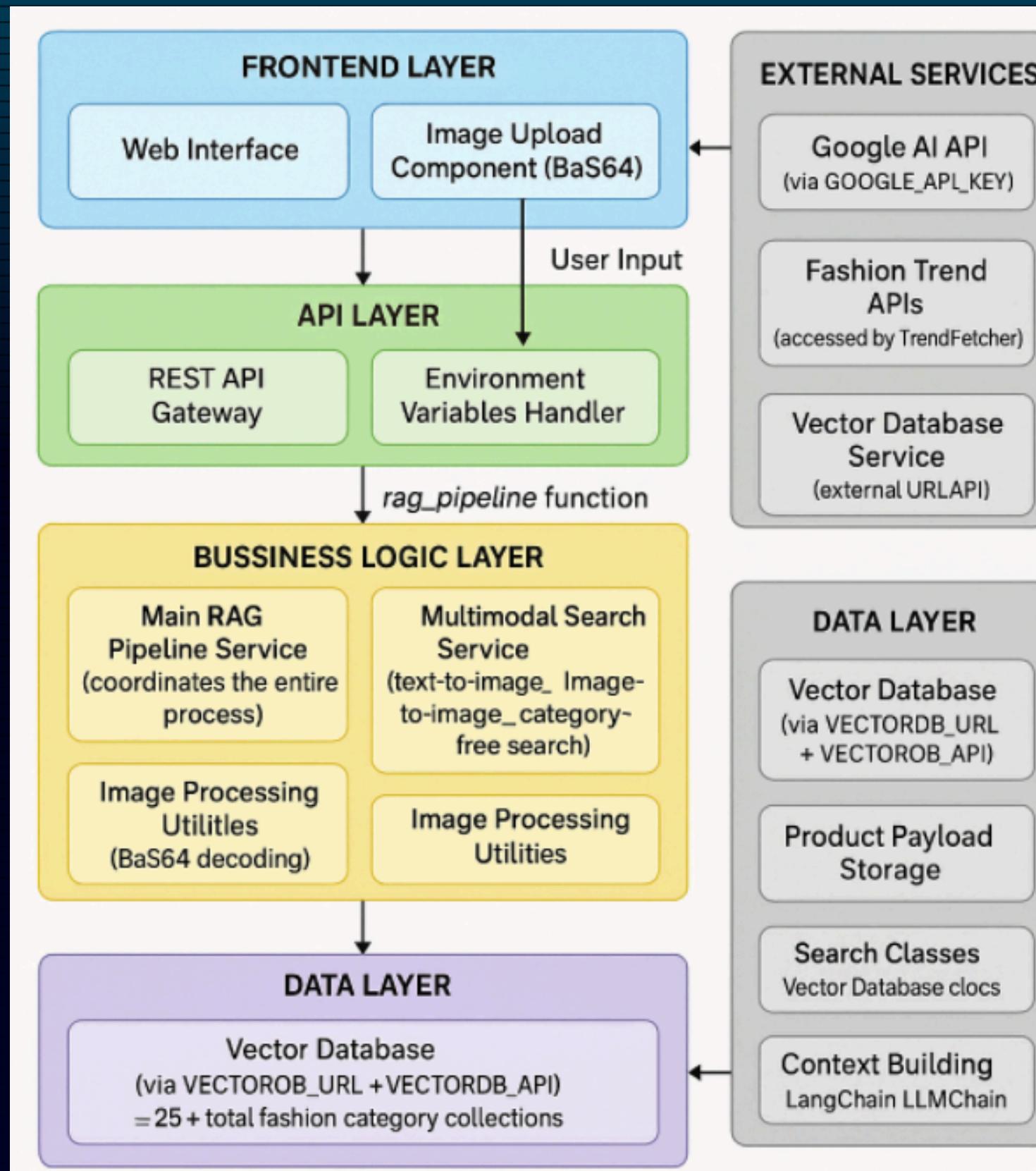


How is the system designed?  
How does this system work?



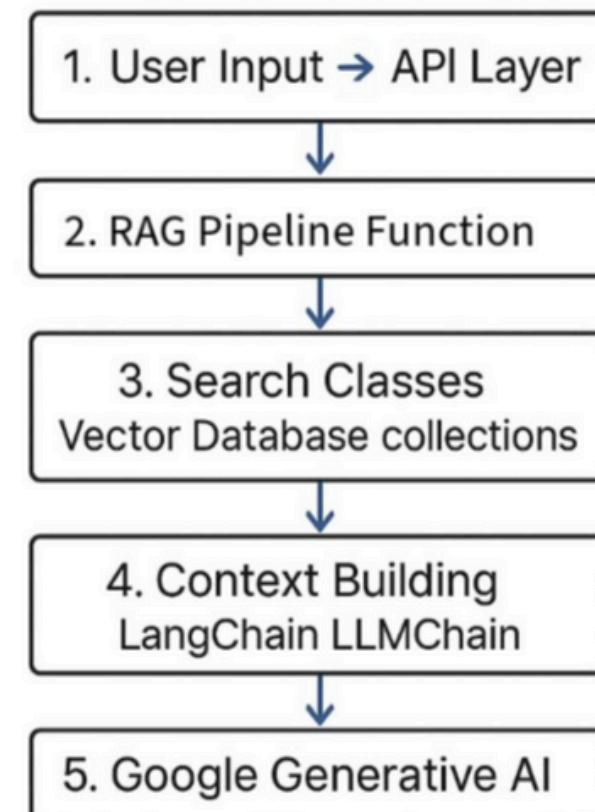
## 5

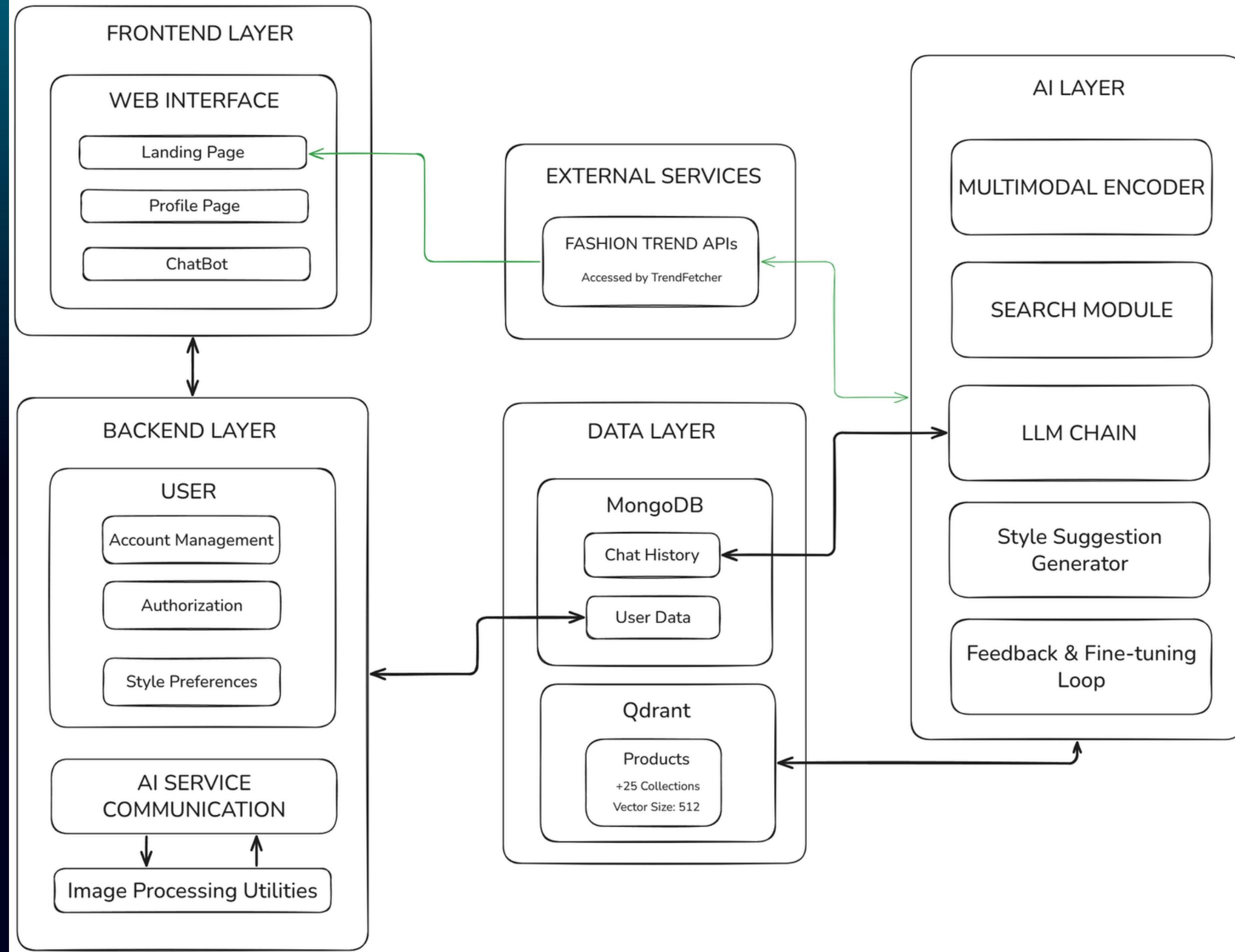
# SYSTEM DESIGN & ARCHITECTURE



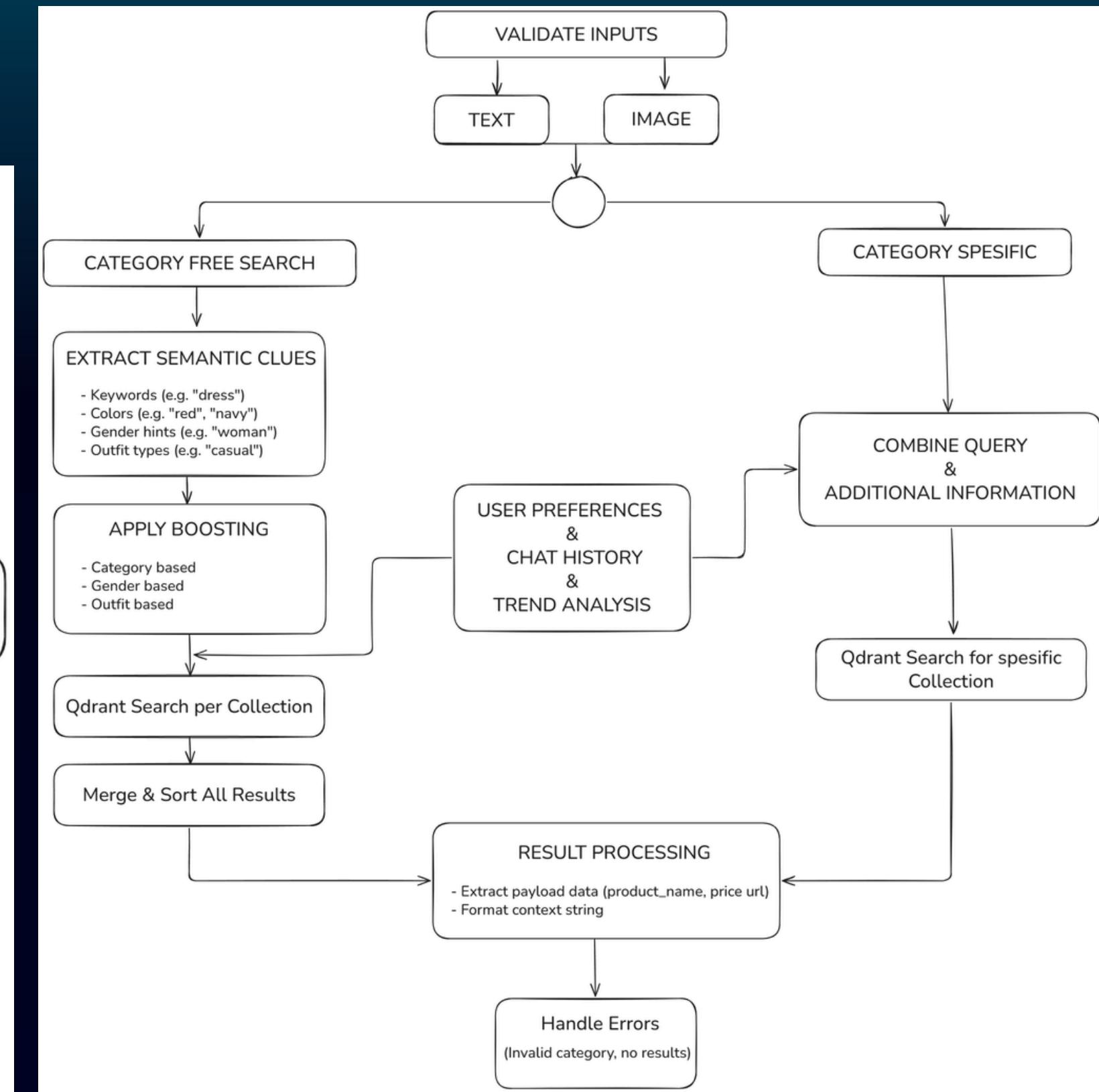
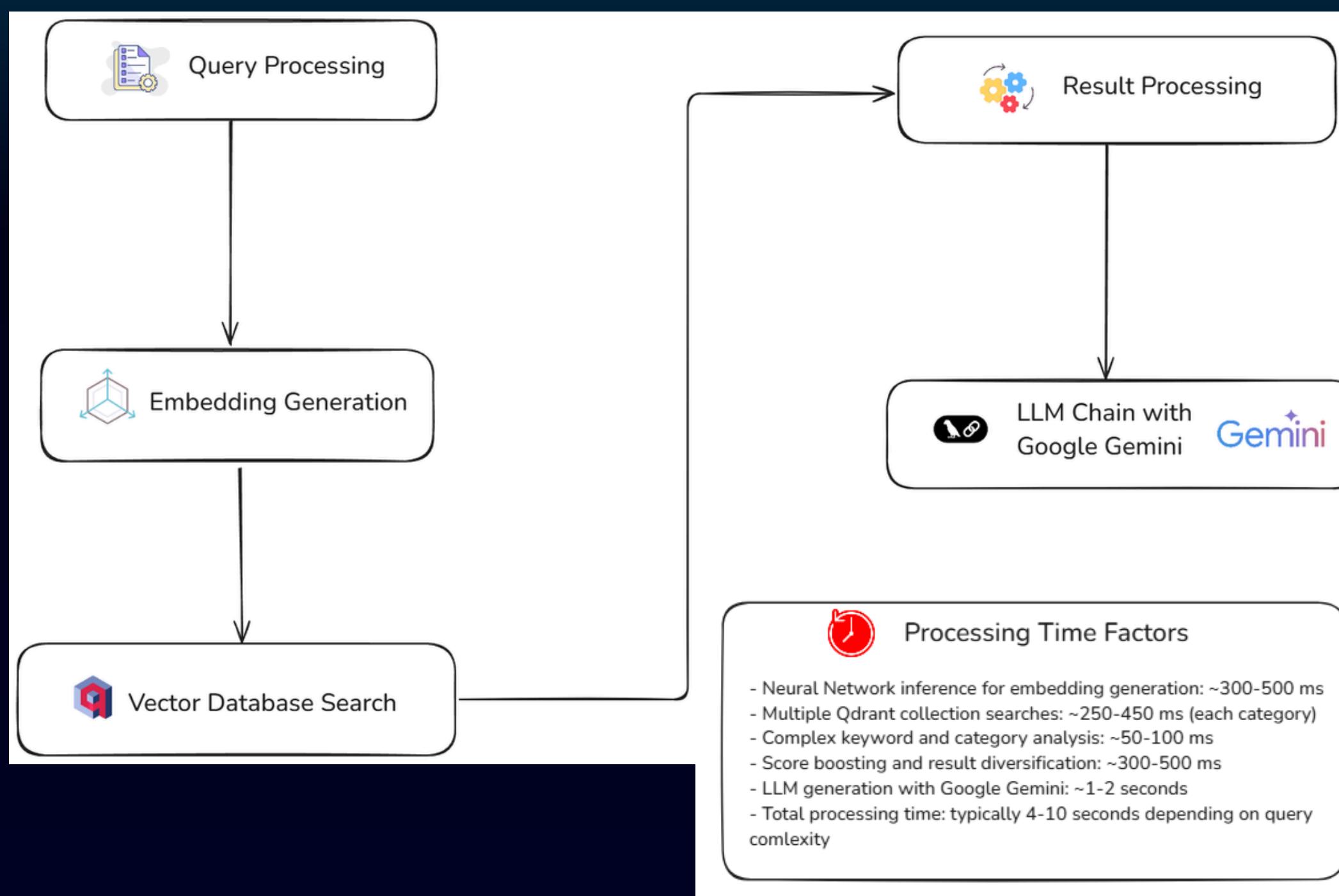
## DATA FLOW

- Python backend
- LangChain framework
- Google Gemini 2.0 Flash
- Vector database (external service)





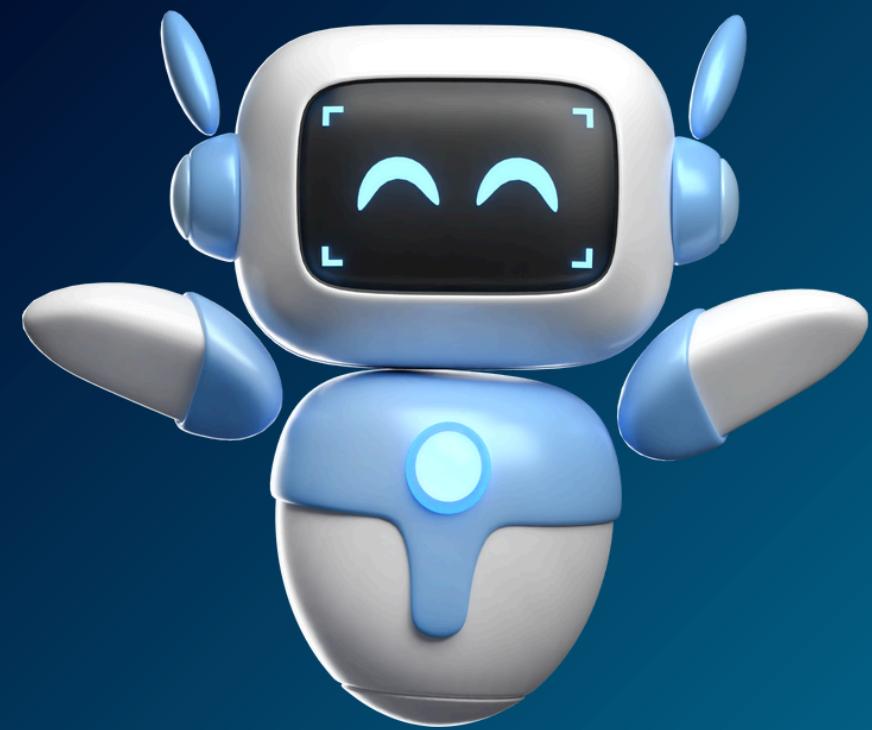
# RAG PIPELINE DIAGRAM



# 6

# OUR CONTRIBUTION

- RAG-Fashion Integration
- Category-Free Search: Intelligent cross-category discovery without manual selection
- Multimodal Fusion: Text + Image + Trend analysis in a unified pipeline
- Virtual Try-On Integration: AI-powered clothing visualization using diffusion models
- Personal AI Stylist: Memory-enabled conversational fashion assistant with context awareness



# CONCLUSION & FUTURE WORK

- Successfully implemented multimodal RAG.
- Achieved intelligent fashion recommendations.
- Integrated multiple AI technologies.
- Created a working end-to-end system.
- Completed an end-to-end prototype that is ready for deployment.

- AR/VR virtual try-on integration
- Shopping cart features
- Real-time inventory synchronization
- Mobile app development
- Multi-language support
- Voice chat capabilities

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# Multimodal RAG-Based Product Recommendation System

www.dior.com/fashion-news/designer-luxury/dior-italy-probe-supply-chain-1237806592/



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chner/judicial legislation

FASHION / DESIGNER AND LUXURY

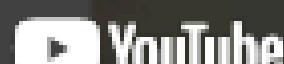
## Dior Welcomes 'Positive Conclusion' of Italian Probe

The French fashion house was cleared of any wrongdoing and said it remains "committed to upholding our values of transparency and respect throughout our supply chain."

By MILES SOCHA, LILY TEMPLETON MAY 21, 2025, 3:22AM



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Here's Every Air



Thank you!

Questions?

