

# Project Report: Fashion Search AI

## Objectives:

The main objective of this project is to develop a fashion query response system that utilizes AI models to provide detailed and user-friendly responses to fashion-related queries. The system aims to enhance user experience by generating informative and contextually relevant answers, thereby assisting users in finding fashion items based on their preferences.

## Design:

The project involves two main layers: the search layer and the generation layer. The search layer is responsible for retrieving relevant fashion items from the dataset based on keyword matching or predefined criteria. The generation layer utilizes advanced AI models like GPT-3.5 to generate detailed responses to user queries, incorporating context and generating natural language responses.

## Implementation:

The implementation involved several steps, including data preprocessing, model integration, and query response generation.

### Data Preprocessing:

The CSV dataset was formatted to enhance data quality and readability.

Blank entries were replaced, decimal points were standardized, and unnecessary columns were removed.

Text columns were cleaned to remove HTML tags and extra characters.

### Model Integration:

Advanced AI models like GPT-3.5 were integrated into the system to generate responses to user queries.

Queries were passed through the model to generate detailed and contextually relevant responses.

### Query Response Generation:

User queries were processed by both the search layer and the generation layer.

The search layer retrieved relevant fashion items from the dataset.

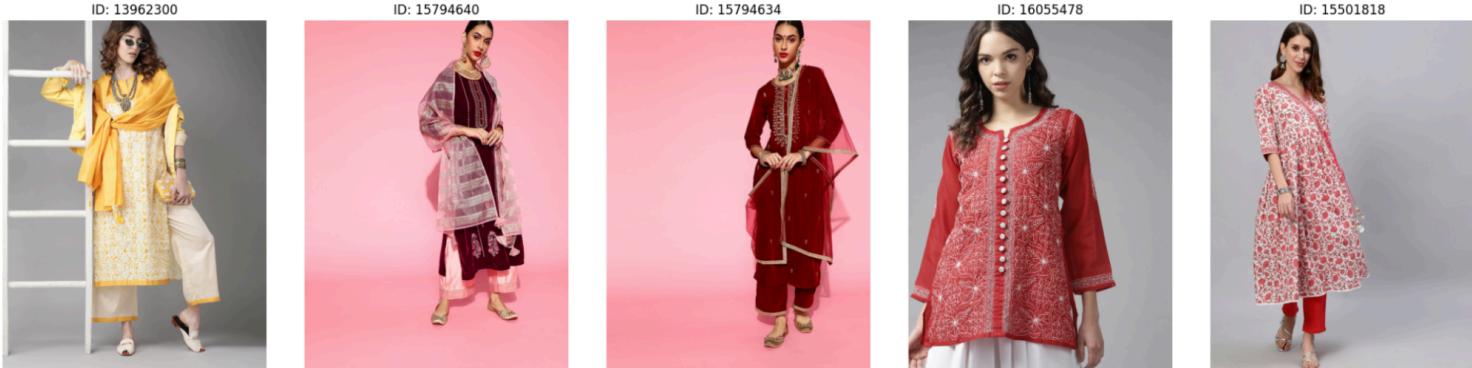
The generation layer utilized AI models to generate detailed responses to user queries, incorporating context and generating natural language responses.

Here are the few queries that were used to test the model:

#Query 1: Looking for a floral kurta set under ₹1500 for festive wear

Search Layer:

Search Layer:



	Product Name	Product Type	Description	Score	Attributes
0	Indo Era Classy Off White And Yellow Printed K...	Kurta Set	Add an elegant touch to your look instantly wi...	1.5607	{"Add-Ons": "NA", "Body Shape ID": "443,333,32...}
1	Indo Era Woven Design Velvet Kurta Set	Kurta Set	An absolute go-to for special occasions, this ...	0.6167	{"Add-Ons": "NA", "Body Shape ID": "443,333,32...}
2	Indo Era Embroidered Velvet Kurta Set	Kurta Set	Achieve the perfect ethnic look with this eleg...	-0.6273	{"Add-Ons": "NA", "Body Shape ID": "443,333,32...}
3	ADA Red & White Floral Embroidered Chikankari ...	Kurti	<ul><li>Red and white straight kurti</li><li>F...	-1.2105	{"Body or Garment Size": "Garment Measurements..."} {"Body Shape ID": "443,333,324,424"}
	.Jaipur Kurti Women White Floral		<ul> <li> Colour: white </li> <li>		

Generation layer:

Generation Layer:

Based on your query for a floral kurta set under 1500 for festive wear, here are your top recommendations:

1. Indo Era Classy Off White And Yellow Printed Kurta Set: This kurta set features a beautiful floral printed kurta in off white and yellow hues, making it perfect for festive wear. It comes with palazzos and a striped dupatta, giving a complete look for under 1500.
2. ADA Red & White Floral Embroidered Chikankari Kurti: This red and white floral embroidered kurti is a great option for festive occasions. The handloom cotton blend fabric and elegant embroidery make it a stylish and sustainable choice for under 1500.
3. Jaipur Kurti Women White Floral Printed Angrakha Kurta: This white floral printed angrakha kurta is another excellent option for festive wear. With its V-neck, three-quarter sleeves, and thread work detail, it offers a unique and fashionable look for under 1500.

These recommendations combine style, comfort, and affordability, making them ideal choices for your festive wardrobe.

ID: 13962300



ID: 15501818



ID: 16055478



#Query 2: Show me summer dresses for women with cotton fabric.

## Search Layer:

🔍 Search Layer:

ID	Product Name	Product Type	Description	Score	Attributes
0	High Star Women Rust Orange Mom Fit Cotton Trouser	Trousers	<ul><li>Rust orange woven trousers</li><li>Mom...</li>	-3.0613	{'Add-Ons': 'NA', 'Body or Garment Size': 'To...'} {"Body or Garment Size": "T..."} {"Color": "Rust Orange"} {"Fabric": "Cotton"} {"Style": "Mom Fit"} {"Type": "Trousers"}
1	H&M Women Blue Denim Skirt	Skirt	<p>Short, 5-pocket skirt in sturdy cotton denim</p>	-3.4652	{'Add-Ons': 'NA', 'Body Shape ID': '443,424', ...} {"Body Shape ID": "443,424"} {"Color": "Blue"} {"Fabric": "Denim"} {"Style": "5-pocket"} {"Type": "Skirt"}
2	URBANIC Women Beige Solid Cotton Hooded Co-Ords Set	Co-Ords Set	<b>Top design</b><ul><li>Beige solid crop top<...</li></ul>	-3.6055	{'Add-Ons': 'NA', 'Bottom Closure': 'Slip-On', ...} {"Bottom Closure": "Slip-On"} {"Color": "Beige"} {"Fabric": "Cotton"} {"Style": "Hooded"} {"Type": "Co-Ords Set"}
3	H&M Women Blue Cotton Vest Top	Vest Top	<p>Vest top in soft cotton jersey with narrow ...</p>	-3.8682	{"Body Shape ID": "324,424", 'Body or Garment ...'} {"Body Shape ID": "324,424"} {"Color": "Blue"} {"Fabric": "Cotton Jersey"} {"Style": "Narrow"} {"Type": "Vest Top"}
	H&M Girls Pink & Turquoise Blue 5-Pack		<p>Crop tops in soft cotton jersey with ...</p>		{"Body or Garment Size": "Garment Size 12-13 years"} {"Body or Garment Size": "Garment Size 14-15 years"} {"Color": "Pink"} {"Fabric": "Cotton Jersey"} {"Style": "Crop Tops"} {"Type": "5-Pack"}

## Generation layer:

🔍 Generation Layer:

Here are some summer dresses for women with cotton fabric:

### 1. H&M Women Blue Denim Skirt

- This denim skirt is made of pure cotton, making it breathable and perfect for summer. The straight style and mini length offer a casual and stylish look for warm weather.

### 2. URBANIC Women Beige Solid Cotton Hooded Co-Ords Set

- This co-ords set is made of pure cotton, ensuring comfort and breathability during summer. The beige solid crop top with a hood and the matching shorts make a trendy and effortless summer outfit.

### 3. H&M Women Blue Cotton Vest Top

- This vest top is made of soft cotton jersey, which is ideal for hot summer days. The sleeveless design and shoulder straps provide a comfortable and stylish option for casual summer wear.

ID: 19202098



ID: 19071664



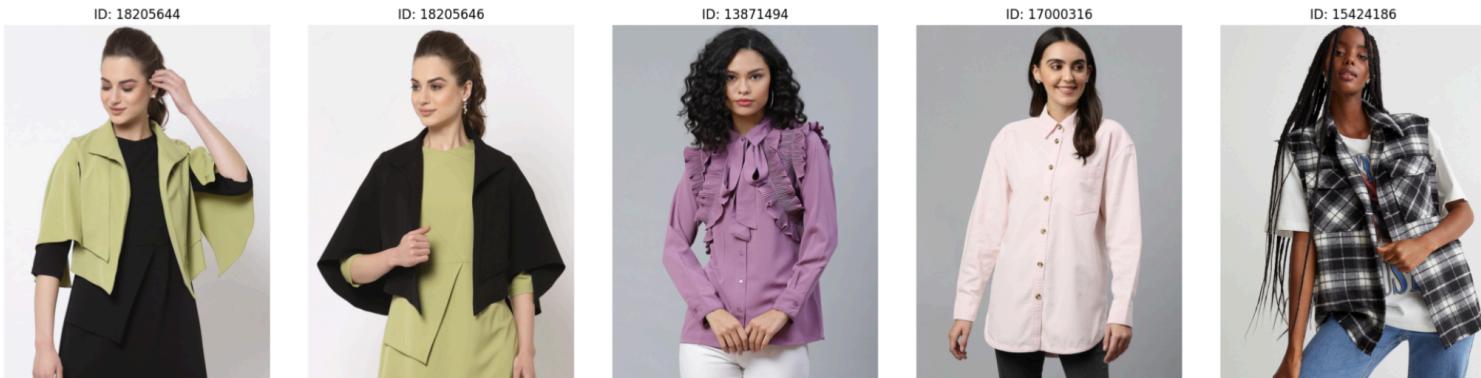
ID: 15634472



#Query 3: Suggest formal shirts for office meetings.

## Search Layer:

### 🔍 Search Layer:



	Product Name	Product Type	Description	Score	Attributes
0	OFFICE & YOU Women Olive Green Shrugs	Shrug	Olive green solid open front regular shrug ,ha...	-9.2650	{'Body or Garment Size': 'Garment Measurements...}
1	OFFICE & YOU Women Black Shrugs	Shrug	Black solid open front regular shrug ,has thre...	-9.7093	{'Body or Garment Size': 'Garment Measurements...}
2	plusS Purple Ruffle Detail Shirt Style Victorian Top	Shirt, Top	Feel confident and look great as you step out ...	-9.7122	{'Body Shape ID': '324,424', 'Body or Garment ...}
3	Marks & Spencer Pink Shirt Style Top	Shirt, Top	<ul><li>Pink regular shirt style top</li><...>	-10.3032	{'Body Shape ID': '333,324,424', 'Body or Garm...

## Generation layer:

### 🔍 Generation Layer:

Based on your query for formal shirts for office meetings, here are some recommended options:

#### 1. Marks & Spencer Pink Shirt Style Top

- This pink shirt style top is a great option for office meetings due to its classic design with a shirt collar, long cuffed sleeves, and button closure. Made from pure cotton, it offers comfort and a professional look for formal settings.

#### 2. OFFICE & YOU Women Black Shrugs

- The black shrug with three-quarter sleeves and a straight hem is a versatile layering piece that can be worn over a camisole or blouse for a polished office look. Its open front style adds a touch of sophistication to your outfit.

#### 3. plusS Purple Ruffle Detail Shirt Style Victorian Top

- While not a traditional shirt, this purple ruffle detail top with tie-up neck and long sleeves offers a unique and stylish twist on office attire. The ruffles add a trendy touch while still maintaining a professional look, perfect for making a statement in meetings.

These options provide a mix of classic and trendy styles suitable for office meetings, ensuring you look both professional and fashionable.

ID: 13871494



ID: 17000316



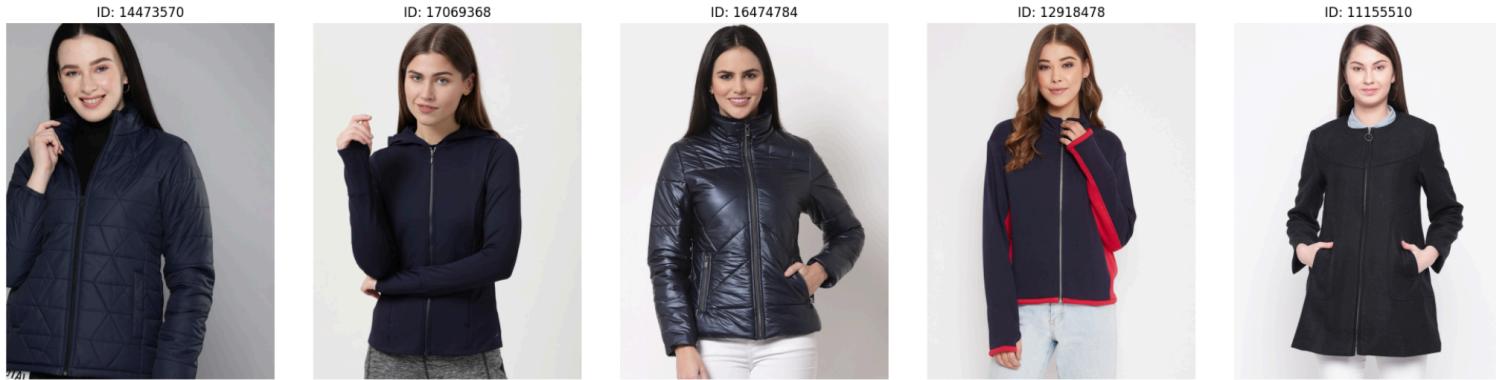
ID: 18205646



#Query 4: Need winter jackets for women in black or navy blue.

## Search Layer:

🔍 Search Layer:



	Product Name	Product Type	Description	Score	Attributes
0	HERE&NOW Women Navy Blue Padded Jacket	Jacket	Navy blue solid padded jacket, has a stand co...	0.0623	{'Add-Ons': 'NA', 'Body Shape ID': '443,324,33...
1	Jockey Women Navy Blue Longline Tailored Jacket	Jacket	Navy blue solid tailored jacket with faux fur...	0.0359	{'Add-Ons': 'NA', 'Body Shape ID': '424', 'Bod...
2	Juelle Women Navy Blue Padded Jacket	Jacket	Navy blue solid padded jacket with zip detail...	0.0175	{'Add-Ons': 'NA', 'Body Shape ID': '443,324,33...
3	AGIL ATHLETICA Women Navy Blue & Red Colourblo...	Tailored Jacket	Navy Blue and Red colourblocked jacket, has a ...	-0.0450	{'Add-Ons': 'NA', 'Body Shape ID': '443,324,33...

## Generation layer:

🔍 Generation Layer:

Based on your query for winter jackets for women in black or navy blue, I recommend the following items:

1. HERE&NOW Women Navy Blue Padded Jacket - This jacket is a versatile option for winter with its navy blue color, padded design, stand collar, and zip closure. It offers warmth and style for casual occasions.
2. Jockey Women Navy Blue Longline Tailored Jacket - A sophisticated choice, this navy blue tailored jacket features a hooded design with faux fur trim, longline silhouette, and cotton lining. It provides both warmth and a trendy look for the season.
3. Marie Claire Women Navy Blue Solid Tailored Jacket - This collarless tailored jacket in navy blue offers a classic and elegant style with its wool fabric, longline length, and straight hemline. It is perfect for a more refined winter look.

These jackets are all suitable for winter weather, come in navy blue as requested, and offer various styles that can complement different outfits.



There were many more queries that were used, for project purposes I have listed only a few here as well as at the code terminal.

#Query 5: Find denim jeans with high-rise waist and bootcut fit

Search Layer:

Search Layer:



	Product Name	Product Type	Description	Score	Attributes
0	High Star Women Blue Bootcut High-Rise Clean Look Stretchable Jeans	Jeans	Blue medium wash 5-pocket high-rise jeans, clean look, stretchable fabric.	4.9883	{'Add-Ons': 'NA', 'Body or Garment Size': 'To-...'} {'Color': 'Blue', 'Style': 'Bootcut', 'Waist Type': 'High-Rise'}
1	High Star Women Black Slim Fit High-Rise Stretchable Jeans	Jeans	<ul> <li> Dark shade, no fade black jeans </li>	2.9452	{'Add-Ons': 'NA', 'Body or Garment Size': 'To-...'} {'Color': 'Black', 'Style': 'Slim Fit', 'Waist Type': 'High-Rise'}
2	High Star Women Blue Slim Fit High-Rise Clean Look Stretchable Jeans	Jeans	Blue medium wash 5-pocket high-rise jeans, clean look, stretchable fabric.	2.9175	{'Add-Ons': 'NA', 'Body or Garment Size': 'To-...'} {'Color': 'Blue', 'Style': 'Slim Fit', 'Waist Type': 'High-Rise'}
3	Calvin Klein Jeans Women Blue Straight Fit High-Rise Stretchable Jeans	Jeans	<ul> <li> Coloured shade, no fade blue jeans </li>	2.6462	{'Add-Ons': 'NA', 'Body or Garment Size': 'To-...'} {'Color': 'Blue', 'Style': 'Straight Fit', 'Waist Type': 'High-Rise'}
4	SF JEANS by Pantaloons Women Black Wide Leg High-Rise Stretchable Jeans	Jeans	<ul> <li> Dark shade, no fade black jeans </li>	2.5627	{'Add-Ons': 'NA', 'Body or Garment Size': 'To-...'} {'Color': 'Black', 'Style': 'Wide Leg', 'Waist Type': 'High-Rise'}

Generation layer:

Generation Layer:

Based on your query for denim jeans with high-rise waist and bootcut fit, here are some suitable recommendations:

#### 1. High Star Women Blue Bootcut High-Rise Clean Look Stretchable Jeans

- This pair of jeans meets your criteria with its high-rise waist and bootcut fit. It features a clean look, heavy fade, and is made of a stretchable fabric blend for comfort and style.

#### 2. High Star Women Black Slim Fit High-Rise Stretchable Jeans

- Although not bootcut, these jeans offer a slim fit with a high-rise waist, making them a flattering option. They also feature a clean look, stretchable fabric, and a dark shade ideal for versatile styling.

#### 3. Calvin Klein Jeans Women Blue Straight Fit High-Rise Stretchable Jeans

- While not bootcut, these jeans are a great option for those looking for a high-rise waist and a straight fit. The stretchable fabric and clean look add to their comfort and style.

These options provide a variety of fits and styles that align with your preferences for high-rise waist jeans with a bootcut fit.

ID: 12317044

ID: 19008506

ID: 18229138



## Challenges:

Several challenges were encountered during the implementation process:

**Metadata Processing:** Initially, there were issues with processing metadata, which affected the display of results. This was resolved through debugging and refining the metadata processing code.

**Dataset Chunking:** Loading the entire dataset without chunking posed a challenge due to memory constraints. However, chunking was not implemented due to time constraints and the manageable size of the dataset.

## Lessons Learned:

Proper data preprocessing is crucial for ensuring data quality and readability.

Integrating advanced AI models can significantly enhance the system's capabilities in generating detailed and contextually relevant responses.

Handling large datasets requires careful consideration of memory constraints and implementation of efficient data processing techniques.

## Future Scope:

As a future scope, the project can be extended by implementing it as a Flask web application and hosting it on a website. This would provide better interaction and aesthetics for users. Additionally, rephrasing prompts and introducing interactive sessions with criteria-based filters could further enhance the system's performance and user experience.

## Conclusion:

Upon comparison of the search query outcomes from both the search and generation layers, it becomes apparent that the generation layer produces more detailed and comprehensible results. While the search layer retrieves relevant information through keyword matching or set criteria, the generation layer utilizes advanced AI models like GPT-3.5 to dynamically generate responses, incorporating context and furnishing tailored and informative answers.

The generation layer's capability to comprehend query context and furnish responses in natural language enhances overall readability and user engagement. Its flexibility allows it to adapt to various query formats and provide customized responses, catering to diverse user preferences.

This versatility makes it a valuable tool for tasks necessitating comprehensive understanding and communication of information. In summary, while the search layer efficiently retrieves relevant information, The generation layer significantly enhances output quality and readability, making it a preferred choice for tasks requiring detailed and user-friendly response.

