



Problem Statement:
Conversational Fashion Outfit Generator powered by GenAI

Team Name:
Adrenex

Team Members Details

Team Name	Adrenex		
Institute Name	Graphic Era deemed to be University		
Team Members	1(Leader)	2	3
Name	Harshit Bajeta	Jai Anand	Nilesh Popli
Batch	2024	2024	2024

Deliverables/Expectations

1. Gen AI-Powered Fashion Outfit Generator: Develop a functional and intuitive conversational AI system.
2. User Data Integration: Integrate mechanisms to collect and analyze user data, including past purchase history, browsing preferences.
3. Personalized Outfit Recommendations: The generator should be capable of understanding a user's unique fashion preferences.
4. Social Media Trend Analysis: Implement features that allow the AI to analyze and incorporate real-time fashion trends..
5. Interactive Feedback Loop: Enable users to provide feedback and interact with the AI to refine outfit recommendations.
6. Versatile Outfit Suggestions: The AI should be capable of generating outfit recommendations for various occasions, styles, age-specific, regional specific and user profiles.



Glossary

- **Inference:** It is the process of using a trained model to make predictions on new data. This process can be compute-intensive, and running on a dedicated server can be an interesting option. Inference-Api service is a fast way to get started, test different models and prototype AI products.
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- **Fine Tuning:** It is a way of applying or utilizing transfer learning. Specifically, fine-tuning is a process that takes a model that has already been trained for one given task and then tunes or tweaks the model to make it perform a second similar task.

Use Cases

P0-An AI-powered fashion outfit generator for Flipkart that revolutionizes the way users discover and create personalized fashion outfits, in a natural conversational way.

P1-The generator should consider factors such as the user's body type, occasion (e.g., casual, formal, party), and regional and age preferences.

P2-Users should also be able to interact with the outfit generator to give it feedback in terms of what they like, don't like and be able to tweak the outfits in the manner of a conversation.

P3- The generator can take into account the types of clothing items the user frequently views or adds to their cart, ensuring that the outfit recommendations are relevant and appealing.

P4- Generator has considered user's preferences, browsing habits, and the latest fashion trends.

Conversational

Interactive UI, where user can request in a chat friendly way and also provide feedback to improve.



Personalized Results

Get results that are personalised for a user (by user purchase history, wishlist etc.)

Recommendation

Get recommendation based on search history, and similarities

Latest Trendy Outfits

Model trained on latest trendy Outfits used by Influences and Celebrities

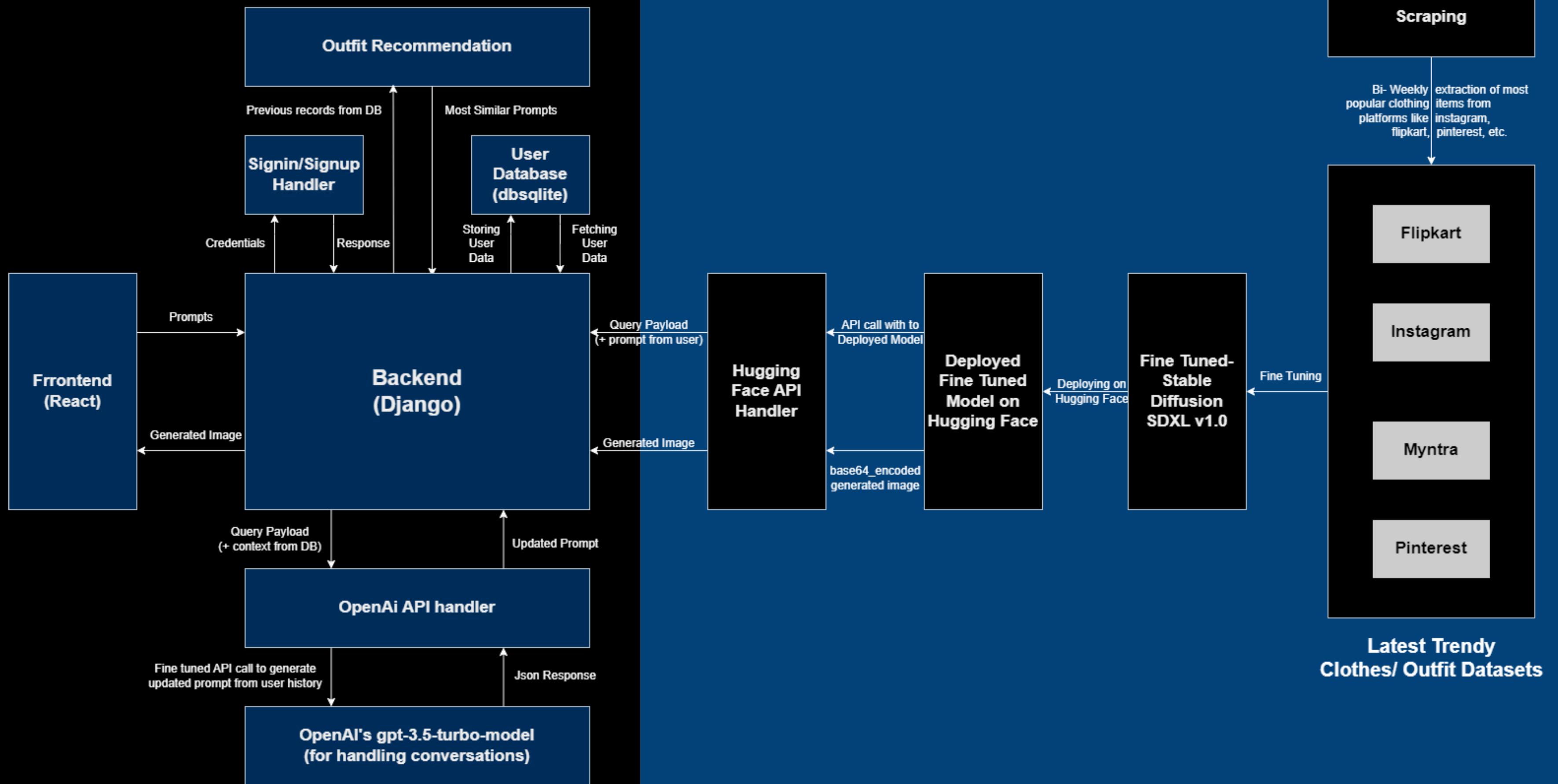


Tech Stack

- django REST framework (for backend)
- react with sass (for frontend)
- dbsqlite (for database)
- hugging face (for model deployment)
- postman (for api testing)
- microsoft blob storage (for serving images)
- openAI (for accessing gpt-3.5-turbo model)



Methodology



Approach

Data Scrapping

Scraped data from the following websites:

1. Flipkart - from the user's purchase history and wishlist
2. Pinterest - images with prompt, of trendy latest outfits
3. Instagram - Images with hashtags, related to trendy, latest outfits.
4. Myntra - Latest clothing products metadata along with images

Stored all this data into a dataset, and then sent time custom dataset for fine tuning.

Generative Model

Base Model: Stable Diffusion xl v1.0

1. Stable Diffusion involves three parts: VAE, U-Net, and optional text encoder. VAE compresses images, U-Net denoises them. .
2. Fine Tuned this model on Custom Dataset.
3. Deployed model on Hugging Face hub.
4. Access model through Inference API.
5. Takes input as prompt, returns base64 encoded image link.

Datasets (Manually Scraped)

From Flipkart (User Purchase History)

size	brand	ideal_for	dominant_material	title	actual_color	type	images	product_details	size_fit	specifications	product_type
XL	IMARA	Women	Polyester	IMARA Women Bl Black	Black	Clothing/Women/	http://assets.myn	Black solid woven	The model (height Transparency : Op Top		
XL	House of Pataudi	Men	cotton	House of Pataudi Black	Black	Clothing/Men/Kur	http://assets.myn	Black printed stra	The model (height 6') is wearing a si: Straight Kurta		
S	The White Willow	Unisex	Cotton	The White Willow White	White	Home/Unisex/Pill	http://assets.myn	Set content: 1 pill	Dimensions: 58.42 cm x 33.02 cm x 10.16 cm		
Onesize	Dupatta Bazaar	Women	Chiffon	Dupatta Bazaar Pi Pink	Pink	Clothing/Women/	http://assets.myn	Pink dupatta&nbs	Length: 2.3 metres Width: 1.1 metre Dupatta		
S	Manyavar	Men	Silk	Manyavar Men Ye Yellow White	Yellow White	Clothing/Men/Kur	http://assets.myn	Yellow and white	The model (height 6') is wearing a si: Kurta with Churida		
L	Wintage	Men	Linen	Wintage Men Beige Beige	Beige	Clothing/Men/Kur	http://assets.myn	Beige solid kurta	\ The model (height 6') is wearing a si: Kurta with Churida		

From Pinterest (Latest Trendy Outfits)

keyword	base_filename
Edgy streetwear looks	a4f8eb6cb320e388fa67aae9b65331f4.jpg
Fall outfit ideas	30086966db288b8b2eb0a72cf40b476b.jpg
Boho chic outfits	61c9f23015a2f80ab608cd85d7184a88.jpg
Romantic dresses	d35e5b2c44b900e2cca550b52fe343bc.png

From Myntra (Clothes for both men & women)

web-scraper-order	web-scraper-start-url	Single	Single-href	Title	Price	image-src
1691817258-1	https://www.flipkart.com/search?q=Men%20pc	https://www.flipkart.co	Men Striped Polo Neck I	₹ 778	https://rukminim2.flixca	
1691817261-2	https://www.flipkart.com/search?q=Men%20pc	https://www.flipkart.co	Men Solid Polo Neck Pu	₹ 1,049	https://rukminim2.flixca	
1691817264-3	https://www.flipkart.com/search?q=Men%20pc	https://www.flipkart.co	Men Solid Polo Neck Co	₹ 700	https://rukminim2.flixca	
1691817267-4	https://www.flipkart.com/search?q=Men%20pc	https://www.flipkart.co	Men Solid Polo Neck Co	₹ 399	https://rukminim2.flixca	
1691817270-5	https://www.flipkart.com/search?q=Men%20pc	https://www.flipkart.co	Men Printed Polo Neck	₹ 629	https://rukminim2.flixca	

From Instagram(Latest Trendy Tags)

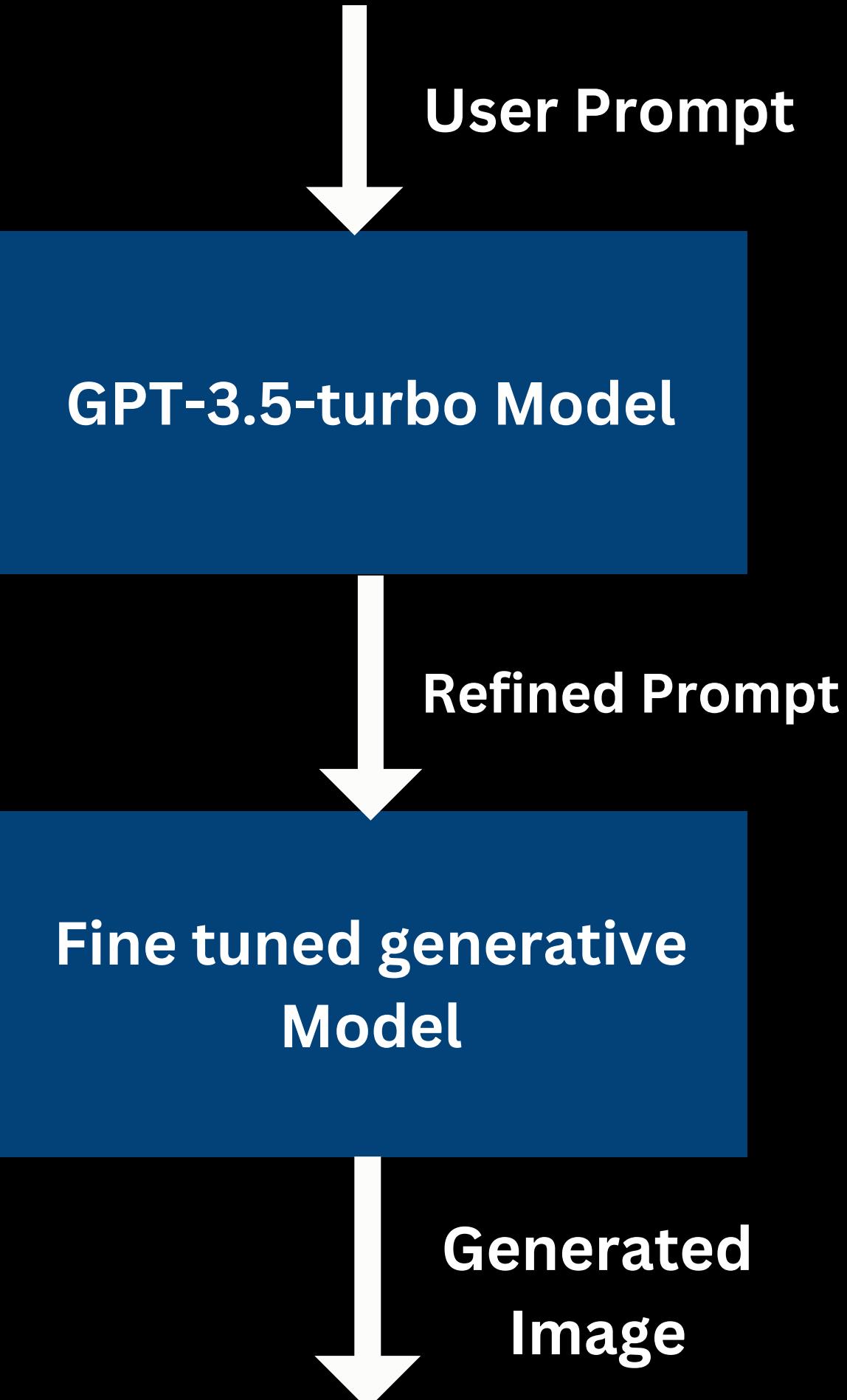
tags	base_filename
#trendyshirts	edf93975950f3d7c4267b5b426ba4eca.jpg
#weddinglehenga	bf5f8abaad3297d74d65cd6e0306a73f.jpg
#trendyoutfits	300b4325e325c434aafc41b07170640b.jpg
#outfits2k23	ffb928660065e90fc287ddf20179bd5d.jpg

Conversation (Chat and Feedback feature)

- Used one of the best text model gpt-3.5-turbo with fine tuning to extract info from the user's entered prompt, and taking search history as context, and generate a new prompt.
- It will take new prompt from user, fetch history from DB, sends requests through openAI API key, and return the new generated prompt

Recommendation (Personalized Results)

- Fetch old prompts from the database.
- Find the most similar prompt from the entered prompt using the similarity matrix.
- If the search history > 2, then find the most similar prompt from the history else there are some default prompts based on keywords from the user prompt.



Limitations

- **Ambiguity:** Text descriptions can be ambiguous, leaving room for interpretation. Different people might imagine different things based on the same text, leading to variability in the generated images.
- **Hardware Specifications:** To train the model, a high-configuration GPU with ample VRAM is required.
- **Lack of Context:** The same outfit can look very different depending on the model's body shape, pose, lighting, and surroundings.
- **Fine Details and Accessories:** Fashion images often feature intricate details like jewellery, buttons, zippers, and stitching.
- **Time-Consuming:** Generating images can take time, especially if the generator needs to consider numerous details and factors.
- **Legal Issues:** If the generated fashion images resemble existing copyrighted designs or logos, there could be legal implications.

Future Scope

- **Linking with Flipkart:** This application will be linked with Flipkart so that it can consider user order history/ Wishlist from Flipkart and can provide more personalized results.
- **Virtual Try-On:** Can be integrated with Flipkart to provide virtual try-on experiences. Customers could describe the type of clothing they are looking for, and the generator could provide personalized images of models wearing those outfits, helping customers make informed purchasing decisions.
- **Higher Resolution and Detail:** Improving the generator's ability to produce high-resolution and detailed images.
- **Continual Learning:** Allowing the model to continuously learn from new fashion trends
- **Hybrid Models:** Combining text-to-image generation with other AI technologies, such as style recommendation systems or trend prediction models, can create more comprehensive and powerful fashion solutions.

Flipkart



GRID

5.0

Thank You