Problem Statement : ***Conversational Fashion Outfit Generator powered by GenAI.***

Team Name: ***TripleX***

Team members details

Team Name	TripleX		
Institute Name/Names	Indian Institute of Information Technology (IIIT), Pune		
Team Members >	**1 (Leader)**	**2**	**3**
Name	Vinit Agarwal	Ishan Upadhyaya	Arvind Khandelwal
Batch	2025	2025	2025

Github url: https://github.com/agarwalvinit5678/FashionOutfitRecommenderGenAI/

Deliverables

- Develop GenAI-powered outfit generator for Flipkart.
- A lightweight model optimized for minimal resource consumption.
- Implement natural conversational interface for personalized outfits.
- Use purchase history and preferences for tailored recommendations.
- Include social media trends (Instagram, Pinterest) for current fashion ideas.
- Analyze style, color, and brands for unique outfit suggestions.
- Generate complete outfits, including clothing, accessories, footwear.
- Consider body type, occasion, region, and age for diverse suggestions.
- Enable user interaction for customization and feedback.
- Provide seamless, confidence-boosting user experience.

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Glossary

- **LLM- Large Language Model**
- **NLTK – Natural Language ToolKit**
- **GPU – Graphics Processing Unit**
- **rembg- remove background**

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Use-cases

- **Personalized Outfits** : The generator analyze a user's purchase history , and social media trends to tailor outfits . This ensure that the outfit recommendations align with the fashion taste.

- **Fashion Trend Analysis** : The generator's ability to scrape the data from social media or fashion blogs and analyze fashion trends , provide users latest fashion recommendations.

- **Feedback and Customization** : Users can interact with the generator to provide feedback on the outfits . The interactive feedback allows user to express their preferences , like and dislike certain aspects of the outfit , requests adjustments , creating a collaborative experience.

- **List of Fashion Influencers** : As the generator scrapes the data from social media or fashion blogs , It makes the users aware about the fashion influencers who are currently in trends.

- **Enhanced Experience** : The generator helps in enhancing the overall shopping experience. When the users feel that their preferences and latest fashion trends has taken into account they are more likely to make confident decisions.

- **Complete outfit Recommendation** : The ability to generate complete outfits , helps user to visualize and put together cohesive looks . This feature helps in simplifying the outfit creation process for the user who may not have strong fashion sense.

Tech Stack / Libraries Used :

- **For Scrapper :**

  Python , Google , BeautifulSoup , NLTK , Transformers , Selenium, rembg, Pil

  (Model Used: openai – clip) , (Pipeline: Zero Shot Image classification)

- **LLM :**

  Gen–AI Model , Torch , LangChain , Transformers , Bits and Bytes.

  (Model Used: arvind2626/f6 {Falcon 7B Fine Tuned})

  (For Fine Tuning: qLoRA)

- **FrontEnd :**

  React , Axios

- **BackEnd :**

  Python , FastAPI

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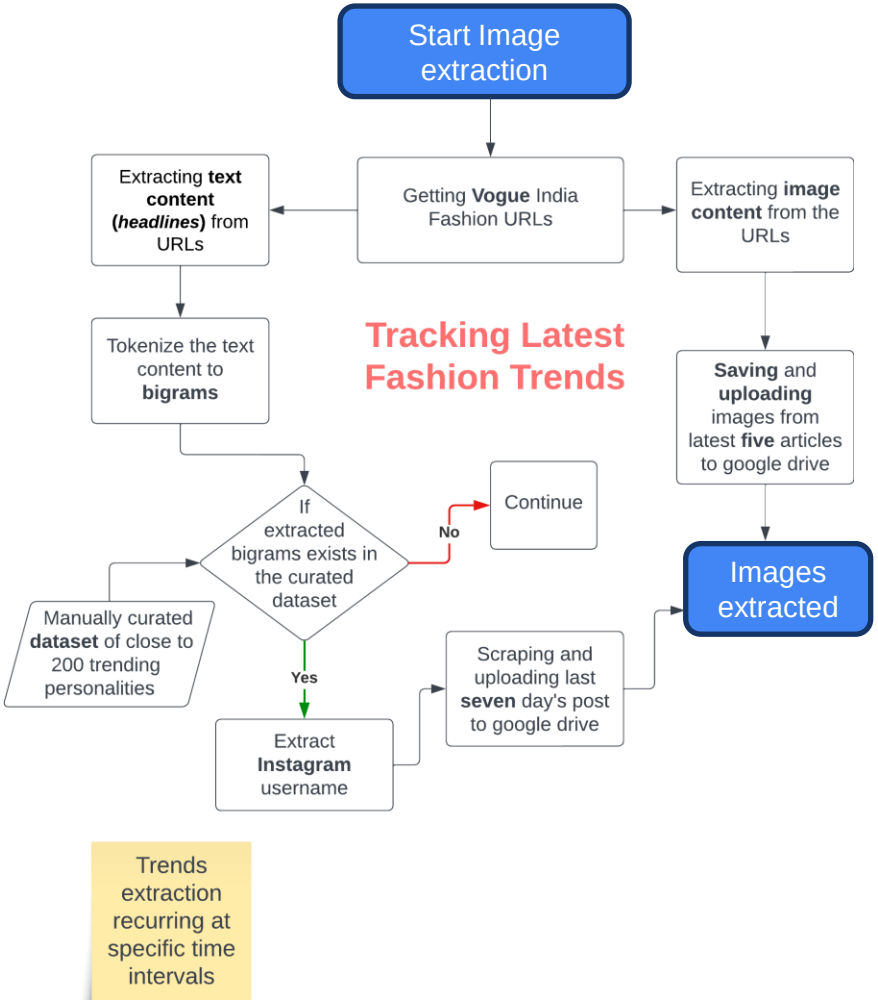
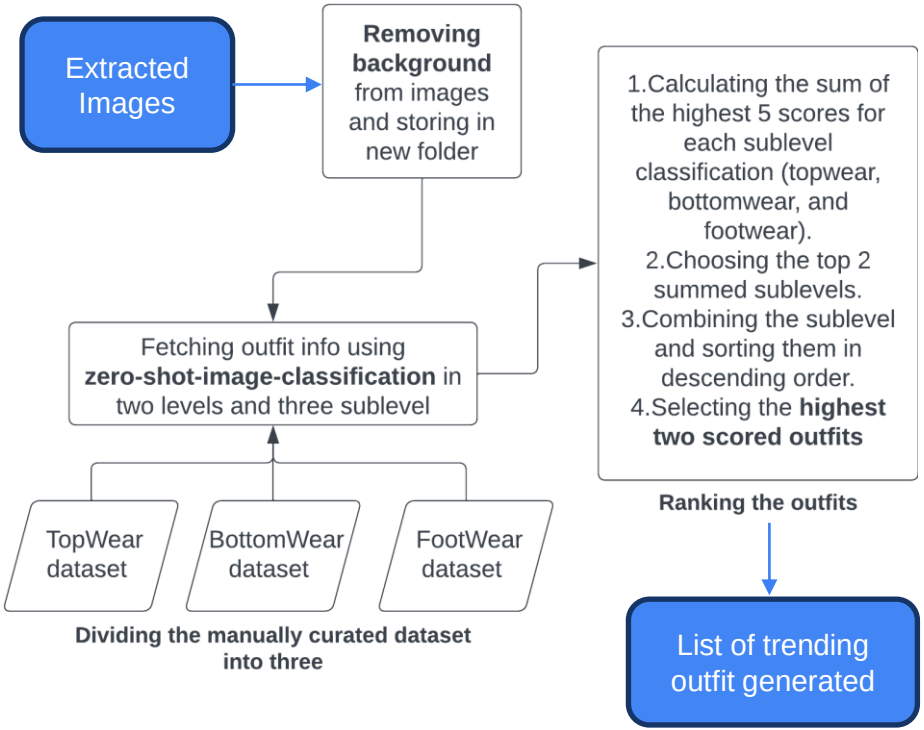


Methodology

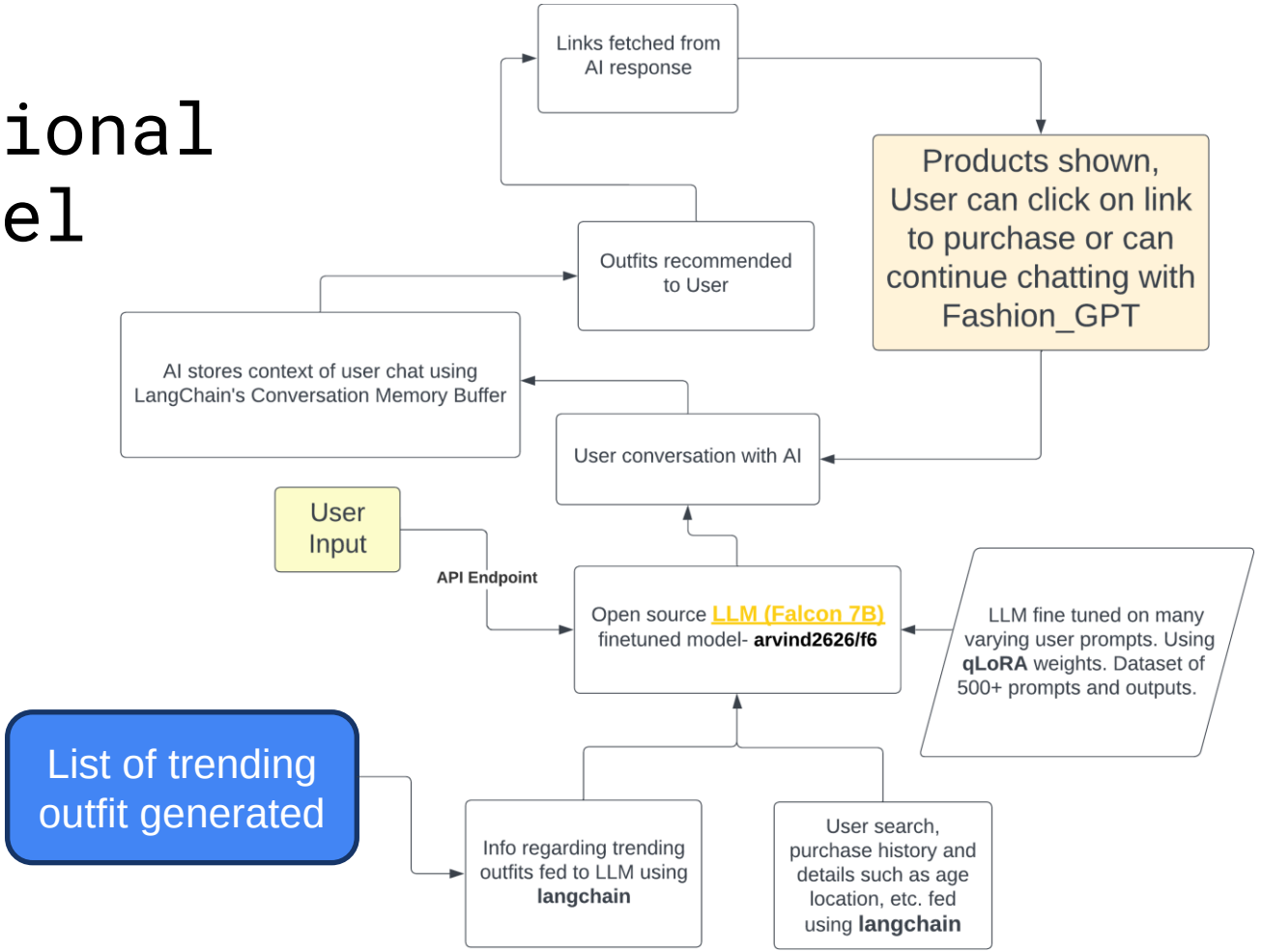
- Firstly, getting Vogue India Fashion URLs and then extracting the images and influencer names from these URLs. Also scraping Instagram for post.
- The next step is to save the extracted images and upload the images to google drive.
- Now , From the stored images remove the background and then store them into a new folder.



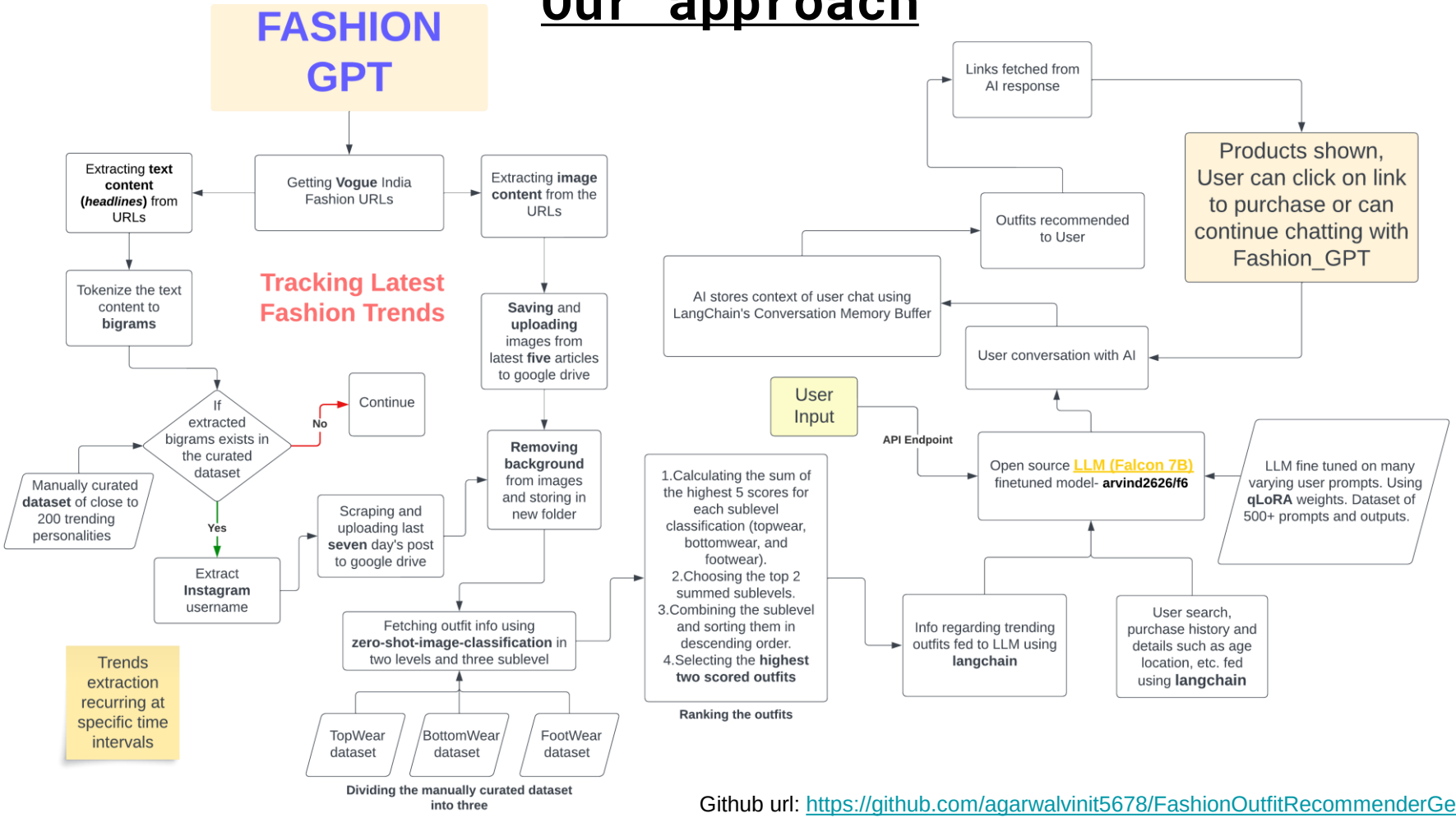
- Now , The images which are stored in the new folder are used to fetch outfit using zero-shot-image-classification.

- The next step is to rank the outfits on the basis of their score and then select the two outfits which have the highest scores, for each image.

Conversational AI Model



Our approach



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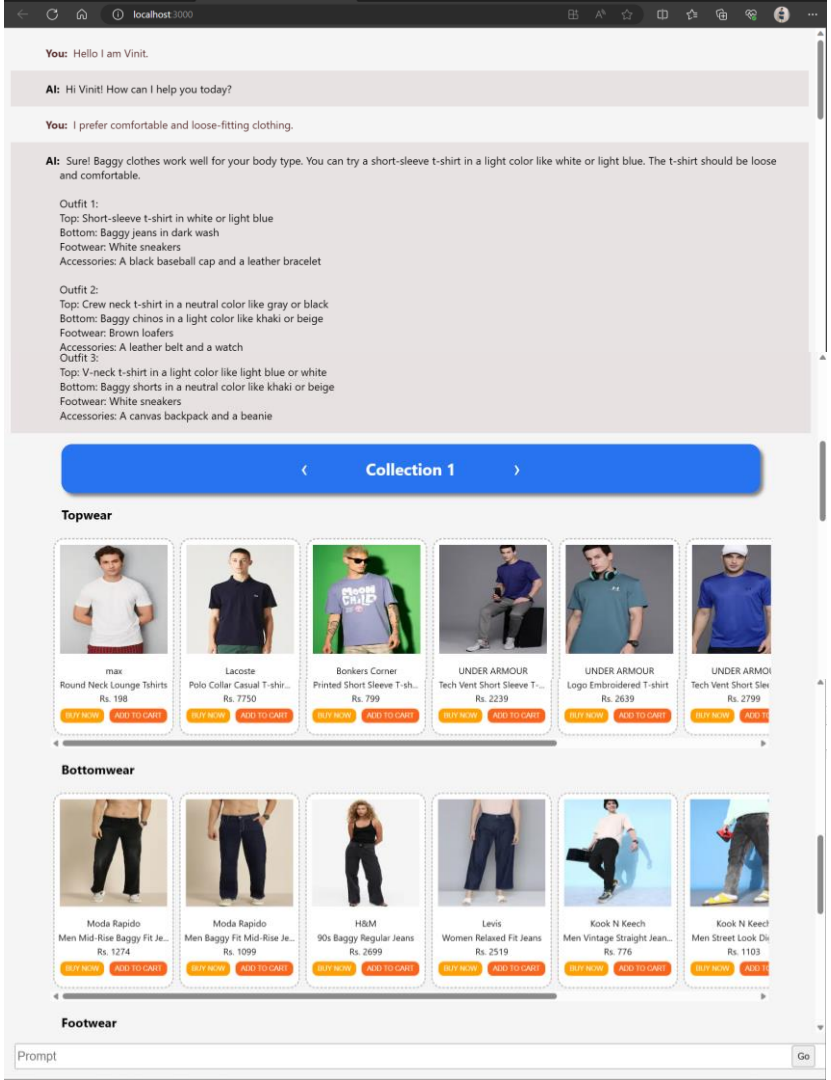
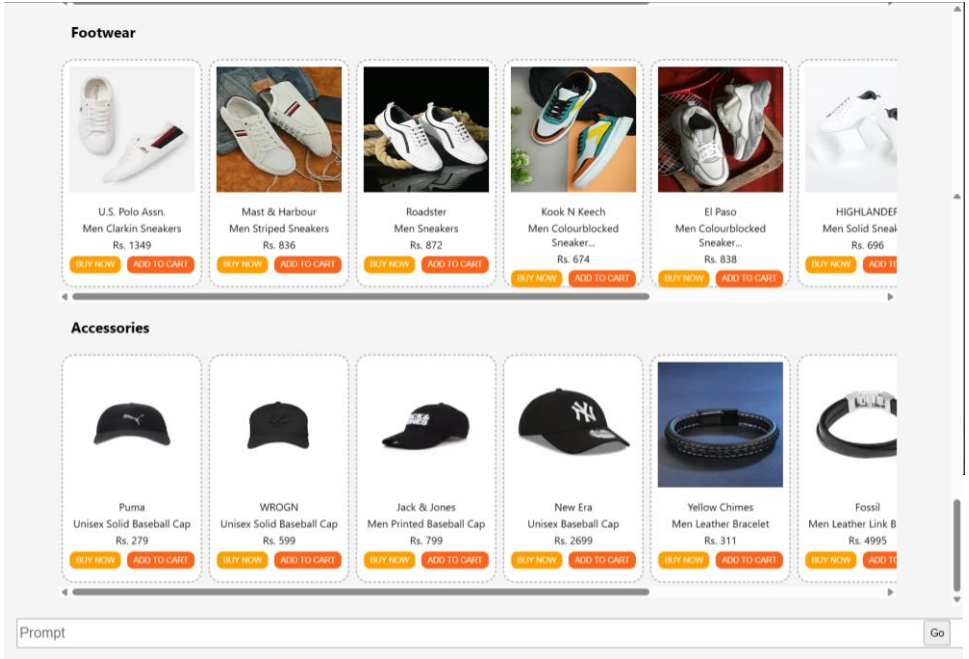
Web application snippets





Limitations

- **Low GPU Resources** : Generally there are 4GB GPU RAM computers available which makes it difficult to use powerful LLMs . Due to which , currently we are using 7B LLM and if required resources are available we can use 70B LLM which may yield better results.
- **Unavailability of Flipkart API** : As sign-up for Affiliate program of Flipkart is closed, we cannot use Flipkart's API for product searching.

Given adequate resources, we are confident in extending the project and optimizing the model to provide significantly improved accuracy and faster response times.

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Future Scope

- **Advanced AI Techniques:** As AI technology continues to evolve, the outfit generator could incorporate more advanced techniques such as deep learning and reinforcement learning. This would lead to improved outfit recommendations, better understanding of user preferences, and more dynamic interactions.

- **Virtual Try-Ons:** Integrating virtual try-on capabilities would allow users to see how outfits look on their own images or avatars. This could be achieved using augmented reality (AR) or virtual reality (VR) technologies, giving users a more immersive shopping experience.

- **Real-Time Fashion Trend Analysis:** The generator could be equipped to analyze real-time fashion trends and adjust its recommendations accordingly. This could involve monitoring fashion shows, celebrity events, and other relevant sources.

- **Voice and Visual Inputs:** Expanding input options beyond text to include voice commands and image recognition would make the interaction more natural and intuitive.

- **Lip-Sync Voice NPC Interaction :** The user and the AI generator can be converted into two different NPC characters which can engage in conversations simulating human-like interaction for a more immersive and engaging experience.

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Flipkart

GRiD

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Thank You