Flipkart GRiD 5.0

Problem Statement Title: *Conversational Fashion outfit Generator by GenAI*

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The team

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Deliverables

•A working conversational outfit generator that can generate stylish and appropriate outfits for users based on their preferences and the occasion.

•A user-friendly conversational interface that allows users to interact with the outfit generator in a natural way.

1.

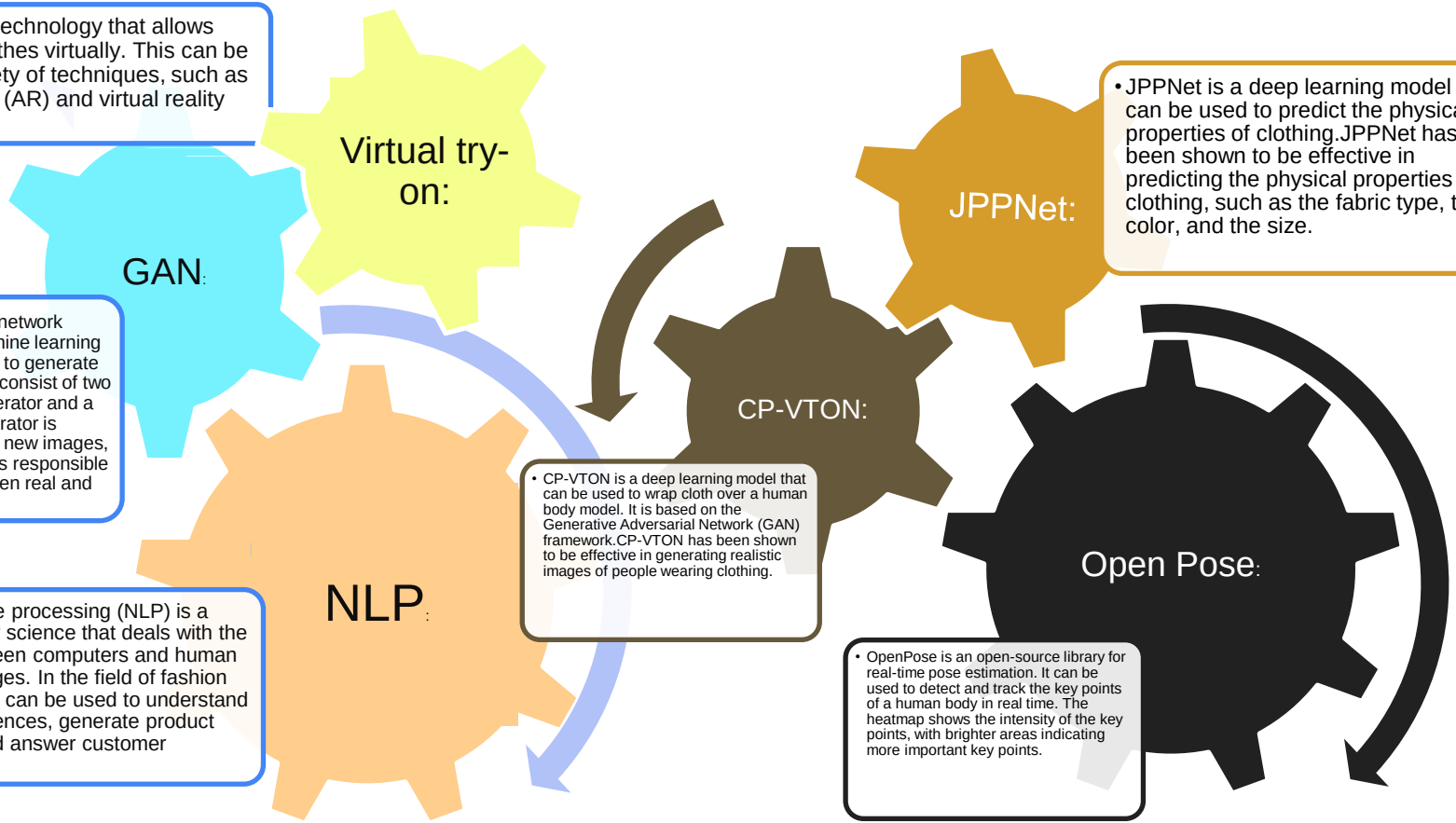
2.

Expectations

- The outfit generator should be able to generate outfit recommendations for a variety of occasions, including work, school, special events, and travel

•The outfit generator should be able to take into account the user's preferences, such as their preferred style, color choices, and favorite brands.

GLOSSARY


Virtual try-on:
•Virtual try-on is a technology that allows users to try on clothes virtually. This can be done using a variety of techniques, such as augmented reality (AR) and virtual reality (VR).
GAN:
•Generative adversarial network (GAN) is a type of machine learning model that can be used to generate realistic images. GANs consist of two neural networks: a generator and a discriminator. The generator is responsible for creating new images, while the discriminator is responsible for distinguishing between real and fake images.
NLP:
•Natural language processing (NLP) is a field of computer science that deals with the interaction between computers and human (natural) languages. In the field of fashion technology, NLP can be used to understand customer preferences, generate product descriptions, and answer customer questions.
CP-VTON:
• CP-VTON is a deep learning model that can be used to wrap cloth over a human body model. It is based on the Generative Adversarial Network (GAN) framework.CP-VTON has been shown to be effective in generating realistic images of people wearing clothing.
JPPNet:
•JPPNet is a deep learning model that can be used to predict the physical properties of clothing.JPPNet has been shown to be effective in predicting the physical properties of clothing, such as the fabric type, the color, and the size.
Open Pose:
• OpenPose is an open-source library for real-time pose estimation. It can be used to detect and track the key points of a human body in real time. The heatmap shows the intensity of the key points, with brighter areas indicating more important key points.

Use Case

Use case 1

Daily wear: This is the most common use case for the outfit generator. People need to get dressed every day, so the outfit generator can be a valuable tool for helping them to put together stylish and appropriate outfits quickly and easily.

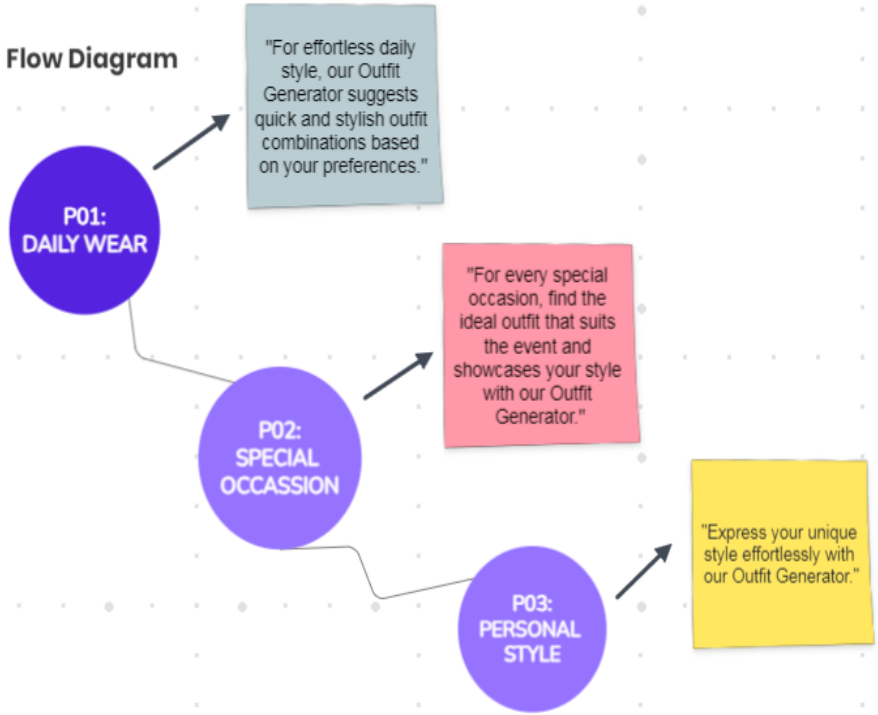
Use case 2

Special occasions: This is another important use case for the outfit generator. People want to look their best for special occasions, so the outfit generator can help them to find the perfect outfit for any event.

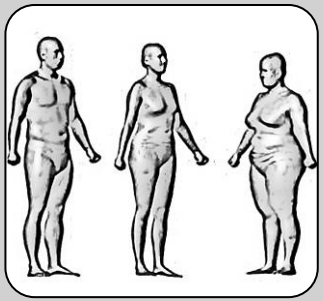
Use case 3

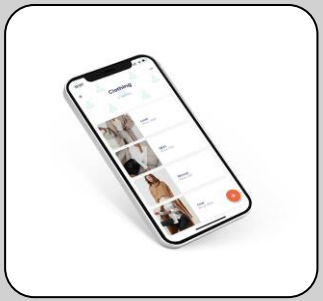
Personal style: The outfit generator can help users to explore their personal style and find new looks that they love. This can be a great way for people to express themselves and feel confident in their own skin.

Flow Diagram



User Preference





User Body Shaping and Mass:

- 1. User Input: Collect text descriptions from users in chatbot about their body attributes and clothing sizes.
- 2. User Image: Allow users to upload images of themselves.
- 3. It will give us a Human Body Shape model.

User History Integration:

- Retrieve the user's historical data, such as wish list items or previously purchased clothing, from your database.

Historical Preferences:

- Analyze the historical data to understand the user's preferences and style choices.
- This information can include clothing types, colors, patterns, and sizes.

Preference Alignment:

- Merge the historical preferences with the preferences collected during the current interaction.
- Align the user's past choices with their current body details and preferences.

Clothing Visualization:

- Upon user's request for clothing options, generate a virtual clothing recommendation.
- Begin by creating a dummy human body image from a predefined dataset.

Image Processing

Human Image key Point:

- It can be used to detect and track the key points of a human body in real time with OpenPose.
- The red dots in the image show the key points of the human body.
- These key points are used to accurately position the clothing on the body. For example, if the key points of the knees are detected, the clothing can be positioned so that it covers the knees.

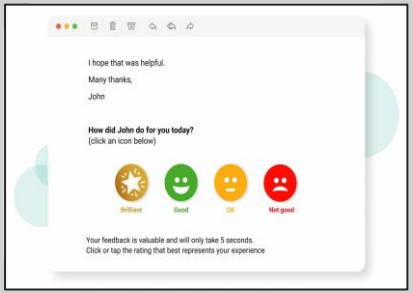
Heatmap and Human Segmentation:

- The heatmap shows the intensity of the key points, with brighter areas indicating more important key points.
- Human segmentation involves separating the body from the background and generate a mask for the dummy cloth.
- The mask is aligned with the body's detected key points, which helps to ensure that the cloth fits realistically over the body with JPP Net model.

Cloth Processing:

- Cloth Image Masking: Creating a mask aligned with the cloth's contours to seamlessly overlay it on the body.
- Background Removal: Isolating the cloth image from its background to ensure focus on the garment itself.
- Pose-Aligned Cloth Generation: Constructing cloth in accordance with the human body's pose for a realistic fit and appearance.

Smart Integration



Seamless Integration with Cp-Ton:

- Feed the human body model, heatmap, and masked dummy cloth to Cp-Ton.
- Cp-Ton is responsible for cloth simulation and wrapping the clothing over the human body.

Enhanced Clothing Visualization:

- Cp-Ton's output showcases the virtual clothing on the dummy human body.
- This gives the user an accurate representation of how the selected clothing would appear on them.

User Interaction and Feedback:

- Engage the user with the virtual clothing visualization.
- Gather feedback and allow users to make adjustments if necessary.

Iterative Refinement:

- Based on user feedback, refine the virtual clothing simulation to enhance realism.
- Adjust cloth fit, position, and other aspects as needed.

ANALYSIS

STRENGTH

Our Outfit Generator empowers users to effortlessly embrace personal style, offering quick daily ensembles, event-specific elegance, and self-expression through curated fashion choices

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WEAKNESS

Potential Limitation: The Outfit Generator's recommendations may occasionally miss nuanced personal preferences, requiring user feedback for continuous improvement."

WEAKNESS

Might lack context awareness, potentially suggesting attire less suitable for certain cultural or situational nuances.

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STRENGTH

Encouraging style exploration, enabling users to effortlessly curate looks that resonate with their identity.

Future Scope

AI-Driven Trend Forecasting:
Harness AI to analyze fashion trends, enabling the generator to provide outfits aligned with the latest styles.

User Behavior Insights:
Utilize user interaction data to refine recommendations based on individual preferences and choices.

Virtual Fitting Room Integration:
Seamlessly incorporate AR technology for virtual try-ons, allowing users to visualize outfits on themselves.

Sustainability Focus:
Integrate eco-friendly fashion options and suggest outfits with consideration for sustainability and ethical choices.

Collaborative Fashion Sharing:
Enable users to share their favorite outfit combinations and seek input from friends, creating a social fashion community.

Wardrobe Integration:
Integrate with users' existing wardrobe data to suggest outfits that incorporate items they already own, reducing redundant purchases.

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Thank You