e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
( Peer-Reviewed, Open Access, Fully Refereed International Journal )
Volume:06/Issue:07/July-2024 Impact Factor- 7.868 www.irjmets.com

# RE-DISCOVERING STYLE USING AI

**Vallurupalli Naina Chowdhary*1**

*1Senior Data Scientist, Walmart, USA.

DOI : https://www.doi.org/10.56726/IRJMETS60551

## ABSTRACT

Style to many, might be a personal expression of identity, creativity and individuality. But the day-to-day hustling and sometimes with the need to be at multiple occasions on a single day we have no time to make decisions. This article provides an insight on how we can leverage the artificial Intelligence (AI) and Generative Adversarial Networks (GAN) to produce a transformative solution for personal styling. It can be customized to every individual depending on the body type, features including skin color, preferences and also occasion. The system can be extended further by integrating into retail omni e-commerce channels for providing seamless and hassle-free shopping experience both online and instore.

**Keywords:** Gen AI, Personal Style, Recommendations, E-commerce.

## I. INTRODUCTION

In the world of constant hustling, people have lesser time and much more outdoor activities to attend than during covid. Many people are heading towards stylists to get their wardrobes fixed. As per the style academy international, the styling market which grew USD 3.5 billion in 2021 is expected to grow USD 11.8 billion in 2026. With the advancement in AI, we can leverage the technology to be our own personal stylist as per our style preference and social occasion making it easier for users to dress better with confidence.

The aspect of styling to fit one's body type, taste, personality and social occasion to provide tailored advice and modify on the go. By integrating the recommendations to e-commerce omni channel platforms, fashion retailers can offer a better experience to the customers. It is a single place to virtual try-on and shopping experience which enables accessibility to a wide range of audience while driving engagement and sales for retailers.

## II. METHODOLOGY

The Methodology can be spilt into two broader arenas – System Design and User Experience design.

### System Design

The system design can be an AI based like a GAN-based which can involve several components working together to deliver fashion recommendations. This includes data collection, preprocessing, GAN Design and Architecture, training to produce recommendations and Integration with user experience interface.

### User Experience

It involves the process to design user interface which includes steps like profile creation, virtual wardrobes and customization options. This can be amalgamated with development of seamless communication between GAN model along with real-time processing. It can also be a structured process for continuous human feedback and improvement along with performance monitoring.

## III. MODELING

### Data Collecting of User

The user-specific data can be collected, like body type, skin color, hair color and texture, smile variations. It can be even extended to user purchase history. Various methods like surveys, images, integration with the retailer platforms can be used for data collection.

### Fashion Data Collection

Large datasets of clothing images, styles, color analysis palettes from various fashion catalogues, e-commerce, social media and web. It can be labelled data or unlabeled data.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
( Peer-Reviewed, Open Access, Fully Refereed International Journal )
Volume:06/Issue:07/July-2024 Impact Factor- 7.868 www.irjmets.com

**Figure 1:** Fashion Catalogue

**Preprocessing**

Various techniques like normalization can be used for data formatting and scaling to ensure measurements. Feature extraction can be used to identify the key features from images and textual description like patterns, colors, styles using convolutional Neural Networks (CNN) for image processing and natural language processing (NLP) for text analysis. Further data can be augmented by enhancing the dataset by generating additional variations through rotating, cropping and flipping which adhere in robustness of the model.

**Model Designing**

One of the models that can be used is GAN or even one can use STYLEGAN. Style GAN is an unconditional human image generation is an important task in vision and graphics, which enables various applications in the creative industry. It can create realistic images while manipulating and controlling certain features or styles of the image. These styles associated with the generated images could be features like color, texture, pose. With GAN we can create new fashion images or outfit recommendation based on input data.

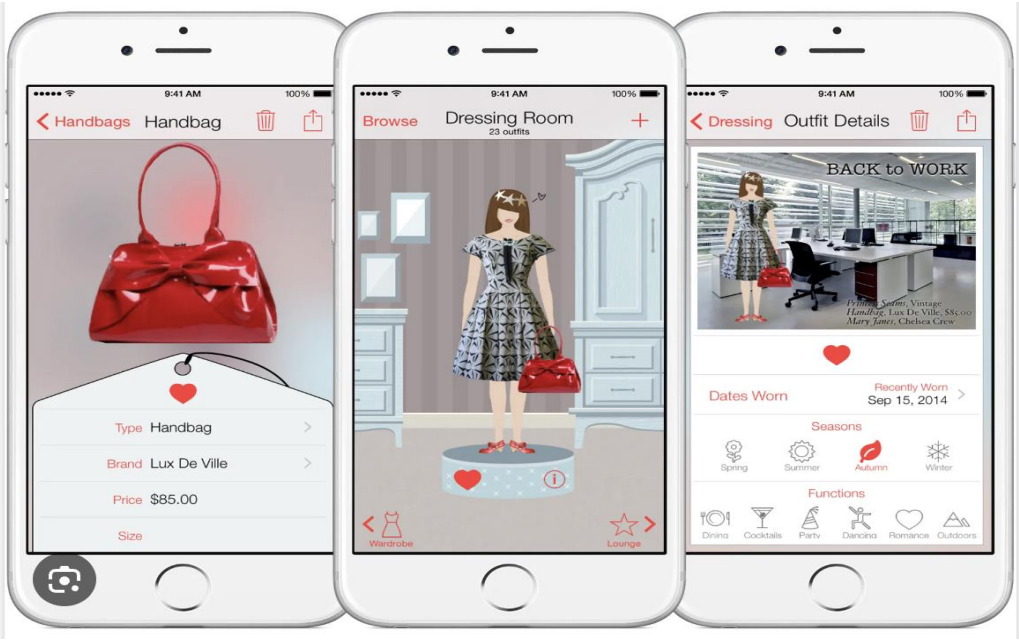


**Figure 2**: Virtual Wardrobe

**Training**

We can train iteratively to produce more realistic and personalized images that is non-discriminable with real fashion.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
( Peer-Reviewed, Open Access, Fully Refereed International Journal )
Volume:06/Issue:07/July-2024 Impact Factor- 7.868 www.irjmets.com

**User Interface**

Profile Creation – User can create a profile and provide the required physical attributions like body type, skin color, style, occasions.

Virtual Experience -Virtual Wardrobe can be displayed for users to view and interact with the generated outfits. It is like a customized catalogue. User can also make adjustments as per the choice of colors, prints and designs. They can also adjust as per occasion preference, season of the year, current trends in the industry. Users can also browse through generated outfits to mix and match items see how the overall outfit looks together. A try-on experience can further enhance the user experience as it allows the user better understand how they would be looking once they wear them. This can not only be limited to clothes, but can be extended to accessories and makeup which enable to determine the overall look for the occasion.

Compatibility to users - The API should be developed to be compatible in both web and mobile device to provide an uninterrupted experience from any channel

**Integration to E-commerce Platform**

Product availability is crucial when integrating the user interface to the e-commerce channel. Synchronizing the recommended outfit with real -time inventory from online and instore is a key factor in enhancing the sales and retention of the customers. Allowing users to add the required items when shopping online and suggesting personalized promotions and coupons play a key role in attracting new customers.

**Feedback and Improvement**

Continuous feedback is paramount to not only cater to needs of the customers better but also improve the performance of the model. Regular monitoring improves system performance which in turn would lead to higher accuracy and better user engagement. Provision should be made to make comments and suggestion to the outfits displayed as per try-ons. Incorporating feedback to training dataset and models can align to better user preference. Notifying users thorough connected channels like in-app suggestion notifications and emails on the latest available styles can also contribute to increased consumer foot-print.

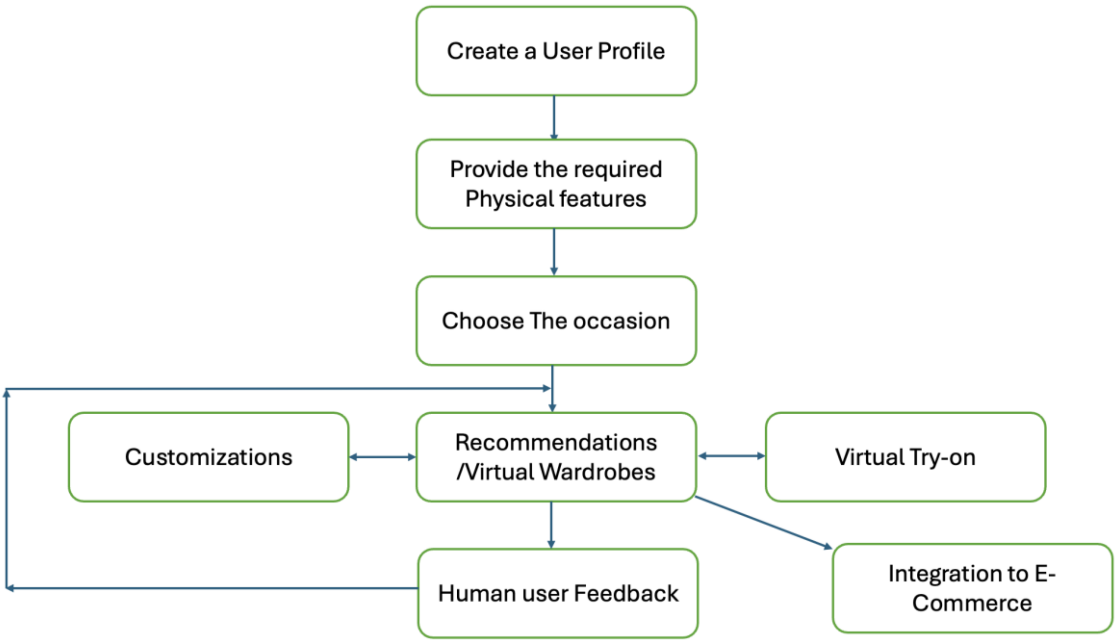


**Figure 3:** Flow chart of the overall process

## IV. CONCLUSION

The integration of AI, personal styling with e-commerce omni-channel platform would offer a revolutionary approach to the personalized fashion. This would not only enhance the shopping experience better but also ensure user get the tailored fashion advice and products at one single destination. This creates more user engagement, much more user foot-print along with an inclusive and satisfying shopping experience to customers.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
( Peer-Reviewed, Open Access, Fully Refereed International Journal )
Volume:06/Issue:07/July-2024 Impact Factor- 7.868 www.irjmets.com

## V. REFERENCES

[1] https://www.styleacademyintl.com/post/why-it-s-the-perfect-time-to-become-a-personal-stylist
[2] Figure 1: https://pagination.com/womens-clothing-catalogs/
[3] Style Based GAN architecture - arXiv:1812.04948
[4] Style GAN - https://stylegan-human.github.io/
[5] Figure 2: https://thedressedaesthetic.com/dressed-app/