Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 44 No. 6 (2023)

Virtual Glamour: Revolutionizing Online Fashion Retail

W. L.V. De Zoysa
Department of Computer Science and Software Engineering
Sri Lanka Institute of Information Technology
Malabe, Sri Lanka
A. L Dissanayake
Department of Computer Science and Software Engineering
Sri Lanka Institute of Information Technology
Malabe, Sri Lanka
G. S. G. Ranathunga
Department of Computer Science and Software Engineering
Sri Lanka Institute of Information Technology
Malabe, Sri Lanka
M. P. Gunathilake
Department of Computer Science and Software Engineering
Sri Lanka Institute of Information Technology
Malabe, Sri Lanka
T. W. K. D. A. Dayarathna
Department of Computer Science and Software Engineering
Sri Lanka Institute of Information Technology
Malabe, Sri Lanka
D. I. De Silva
Department of Computer Science and Software Engineering
Sri Lanka Institute of Information Technology
Malabe, Sri Lanka

***Abstract*—**The world of fashion, marked by its ever-evolving trends, poses challenges for online shoppers, including sizing issues, uncertainty in color choices, outfit coordination, and a lack of personalized assistance. *Virtual Glamour* emerges as a groundbreaking solution, integrating augmented reality, artificial intelligence, and location-based services to revolutionize online fashion retail. This system allows users to virtually try on clothes, offering a personalized and immersive experience. Users can upload body measurements or images for precise sizing assessments. Artificial intelligence driven algorithms provide tailored outfit recommendations based on user preferences and emotions captured through uploaded images. Moreover, *Virtual Glamour* delivers real-time weather-responsive suggestions. This paper explores the system's features, highlighting how augmented reality and artificial intelligence technologies enhance user engagement, reduce returns, and foster customer loyalty. Virtual *Glamour* represents a significant advancement in the online fashion retail landscape, addressing critical challenges and transforming the user experience. It opens doors to future research in scaling and diversifying its offerings, potentially reshaping the future of e-commerce and customer satisfaction.

Keywords*—augmented reality, artificial intelligence, price comparison, virtual try-on, online fashion retail, personalized recommendation*

I. INTRODUCTION

The world of fashion is a dynamic realm, marked by its perpetual transformation and the transient nature of trends. These ever-evolving fashion trends not only capture attention of people but also wield substantial influence on economies worldwide. Amid this constant flux, the global clothing industry plays a pivotal role, significantly contributing to economic growth through its far-reaching impact. The result is an industry that continues to captivate, as it draws individuals into the world of style, cultivating a growing legion of fashion enthusiasts.

However, this vibrant industry is not without its challenges, especially in the context of the online shopping experience. Traditional stores offer the tactile advantage of trying on clothing and benefiting from the guidance of knowledgeable sales associates. In contrast, the realm of online shopping often leaves consumers deprived of these essential experiences. The diversity of body shapes and sizes further compounds the complexity of the online shopping landscape. In this virtual realm, consumers frequently grapple with the challenge of selecting garments that match their personal style, leaving them to navigate this vast sartorial landscape alone.

The implications of these challenges are profound. Frustrations stemming from ill-fitting garments and style misalignment have led to a negative impact on online apparel shopping. Picture the disappointment of receiving an eagerly anticipated item, only to find it wholly unsuitable upon arrival. For individuals lacking extensive fashion expertise, the online shopping process can be bewildering, even disheartening.

Yet, the fashion world is no stranger to innovation. A groundbreaking solution has emerged—a mobile application poised to revolutionize the realm of online fashion. Imagine a platform where users can select an outfit and observe it adorning a virtual model, akin to having a personal fashion show accessible on a smartphone. Beyond this, the application extends its functionality by offering recommendations tailored to weather conditions and seasonal considerations. It becomes the guiding hand in curating an ensemble for any occasion.

Sizing, often a vexing issue in online shopping, is seamlessly addressed by this application. It provides users with visual representations of how a particular garment will fit their unique physique, thus averting the purchase of ill-suited items. This innovation translates to fewer returns and, in turn, happier customers.

Concerns regarding pricing are allayed by an intelligent price comparison feature embedded within the app. It serves as a virtual shopping companion, assisting users in making informed decisions aligned with their budgetary constraints.

This technological advancement is not solely beneficial to consumers; it extends its transformative impact to fashion retailers as well. Powered by machine learning, the application anticipates forthcoming fashion trends, enabling sellers to remain ahead of consumer preferences, thereby streamlining inventory management and enhancing profitability.

In the ensuing exploration of this subject, the annals of fashion and technology's entwined evolution have been embarked on. In this research, the intricacies of innovative solution, shedding light on its inner workings and broader implications will be discussed about. Ultimately, these findings will be synthesized, unveiling the symbiotic relationship between technology and fashion—a partnership poised to herald profound changes in the industry.

The research in the pages that follow dives further into the symbiotic relationship between technology and fashion and examines the intricate details of a ground-breaking solution that has the potential to completely transform online garment buying. The following parts include a thorough literature study that explores the topic of virtual changing rooms and fashion technology and sheds light on earlier studies and advancements. The methodology section provides a road map for the proposed system's effective implementation by outlining the technological foundations and limitations of the system. We analyze the key components of the proposed system, highlighting how augmented reality, artificial intelligence, and location-based services harmoniously combine to answer the problems faced by online fashion shopping. These ideas are brought together in the conclusion and debate, highlighting the revolutionary potential of this technology-driven strategy for transforming the future of fashion retail.

II. LITERATURE REVIEW

The most common problem with purchasing clothing items through online platforms is a lack of awareness of sizes. Since the fitting rooms are not available, the sizes cannot be compared with the body. Most of the time, the purchased items cannot be exchanged if they are not good enough. The other disadvantage is that the color of the purchased garment does not feel good enough after receiving it because most people consider their skin tone when selecting clothes generally. In a physical clothing store, people have a fit-on facility to try out clothes and can get help from sales assistants. But online platforms have a lack of these facilities.

Many studies have been conducted to solve this problematic situation in the past few years. The main feature that has been introduced is a virtual fitting room. A virtual fitting room is a computer-generated environment where clothing can be virtually tried on. Each research project has used a unique strategy to suggest answers using various

designs and technologies, and each has advantages and disadvantages. Additionally, the majority of the solutions utilized the web environment. Real-time 2D image-based systems and 2D or 3D mannequin-based systems can be used to describe the overall solutions.

One research study [1] used a webcam to capture dynamic video of the user. Then it followed the skin identification algorithm. The Haarcascades classifiers were used to identify various body parts, including the head, face, eyes, and lower body. The operational distance between the camera and the subject was adjusted based on the predicted distance. The dress model was scaled to fit the situation. A digital representation of a dress model in real time was possible owing to the subjects' videos.

In [2], a virtual dressing room using image processing was presented. The algorithms were used to implement the features of foreground extraction, extraction of human silhouettes, feature point extraction, wrapping of shirts, and virtual fitting. The algorithms were realized with MathLab software and the libraries of the image processing toolbox.

According to [3], a virtual shopping mobile application (Fitton) was introduced. It provided the entire experience, from clothing selection to ordering clothes. The suitable items were suggested according to the skin tone of the customer. The fit-on facility was provided by rendering a male or female 3D model. The system contained a web-based system for store management and analysis.

In research study [4], a virtual fit-on room product was provided. The distance between the nineteen body landmarks of the customer was captured using two web cameras, and customer body measurements were taken according to the real-time values. The stereo version concept was used to take these measurements. The created 2D image can move according to the customer's movements.

In [5], a virtual fitting display method was provided based on personalized customization. A human model was built using the SMPL model, and the facial features were obtained according to the 3D face synthesis technology. A human body model database was used to match the body shape of the virtual model with the real human body. Comparison with traditional garments with different fabrics was a feature of this system.

According to the study [6], provided an approach using low-level image processing algorithms and image-based rendering to produce appealing images in which a user can see himself wearing different clothes. The model-based approach was avoided.

In research study [7], a cloth model was applied with the improved performance joint position. They used the functionalities of human measurement generator, flexible and look-real cloth model, fashionable body-motion-based GUI.

III. METHADOLOGY

The *Virtual Glamour* web application is developed to maintain the cloth selection process and price comparison. *Virtual Glamour* is mainly focused on solving some main problems that customers face when doing online shopping. Those problems are as follows:

- Insufficient Fit-On Facilities and Size Comparisons
- Unable to Compare Prices Between Different Garments
- Limited Outfit Coordination Capability Comparison
- Lack of Assisted Guidance in Clothes Selection

The application is proposed with the aim of improving the user experience, business requirements, and technical constraints. As per user expectations, customers are expected to compare whether their selected outfits match or not before purchasing them. Also, people who were willing to try baggy outfits had problems choosing the best through online platforms.

The biggest problem with online purchasing is that there is no real fitting room experience. When seeking to determine whether a particular article of clothing will hug them in the proper fit or fall into the undesirable realms of bagginess or tightness, shoppers frequently find themselves in a pickle. This basic issue goes beyond simple aesthetic choices and probes the core of consumer enjoyment. Many prospective consumers are left hesitant and doubtful since they can't physically try on clothing, which can cause them to hesitate or, worse, avoid doing any online shopping at all.

The inability to quickly evaluate the costs of various clothing items, particularly suits, is another frequent problem. A key component of wise purchasing is price comparison, which enables customers to thoroughly assess the value proposition of each potential purchase. Without the ability to compare the prices of several suits or outfits, buyers risk unintentionally overspending or missing out on more affordable options. This deficit can lead to annoyance and disappointment, in addition to having an impact on the financial aspects of the shopping experience.

The challenge of coordinating clothing is yet another frustration for online consumers. When left to one's own devices, matching clothing items to produce coordinated and fashionable ensembles can be a challenging undertaking. Lack of direction in this area may result in fashion gaffes or wasted chances for sartorial refinement. The lack of outfit-matching help becomes a glaring flaw in the online purchasing experience as fashion aficionados increasingly look to showcase their individual trends and build curated wardrobes.

Furthermore, a major barrier to the efficacy and enjoyment of online shopping is the lack of individualized assistance during the clothing-choosing process. Customers long for a perceptive and experienced assistant who can help them sort through the dizzying array of apparel alternatives while providing insights, recommendations, and guidance according to their own preferences and needs. Such guidance can direct users to experiences that appeal to their own sense of style and preference in a world where options seem limitless.

The creation of *Virtual Glamour* goes beyond simply improving user experiences; it is intentionally oriented toward particular corporate goals. The search for a unique competitive edge in the intensely competitive online fashion retail sector is central to these business criteria. *Virtual Glamour* seeks to stand out from the competition by providing a variety of special features that directly solve the frequent problems encountered by customers in the online purchasing environment.

Gaining a competitive edge is essential in a time when options abound and discerning consumers look for convenience and quality. By utilizing cutting-edge technology and creative solutions that transform how people engage with and buy goods online, the application hopes to become a leader in the digital fashion landscape. *Virtual Glamour* seeks to distinguish itself as a forerunner by addressing important issues like fit, price comparison, and outfit coordination, promoting itself as a go-to location for fashion fans and seekers of style.

Growth in sales is one of the key indicators of "Virtual Glamour's success. The system was purposefully created to operate as a potent catalyst for boosting overall customer happiness and sales. The system seeks to lead consumers to confident purchase decisions by providing a thorough and user-friendly platform that makes the easy selection and comparison of clothing items possible. This in turn has the ability to increase conversion rates and encourage repeat business, supporting the important goal of raising sales revenue.

Data use is a key factor in *Virtual Glamour*. The system is aware of the enormous value contained in user data, which ranges from specific preferences to extensive purchase histories. The system is able to offer users individualized recommendations and insights because of the data's thoughtful collection and analysis. Data utilization is a key element of the business requirements, from proposing apparel items that fit a person's likes to guiding more exact marketing and sales methods. *Virtual Glamour* aims to improve the overall shopping experience, enrich customer relationships, and promote brand loyalty through this data-driven strategy.

The foundation of "Virtual Glamour's" business requirements ultimately focuses on creating and fostering brand loyalty. The system strives to build long-lasting relationships with its current customer base rather than focusing only on bringing in new ones. *Virtual Glamour* strives to become more than just a platform of choice but also a trusted and cherished partner in the pursuit of style and self-expression by constantly delivering an exceptional shopping experience that overcomes long-standing difficulties in online fashion retail. *Virtual Glamour* aims to revolutionize the dynamics of online fashion retail through these strategic business criteria, paving the way for excellence and customer-centricity.

The ambitious creation of *Virtual Glamour* is controlled by a set of technical limitations, each of which is crucial to maintaining the system's reliability, performance, and seamless incorporation of numerous cutting-edge technologies.

The decision to use and integrate augmented reality (AR) technology is at the forefront of these limitations. The system must carefully pick an AR technology capable of offering a seamless garment overlay in order to produce a really immersive and realistic virtual try-on experience. The importance of compatibility with many devices, including tablets and smartphones, cannot be overstated. Additionally, a key component of providing a realistic and engaging virtual try-on experience is the technology's capacity to precisely superimpose clothing items onto the user's image while taking into consideration elements like lighting, shadows, and fabric texture.

The strength of Virtual Glamour's artificial intelligence (AI) algorithms heavily influences its efficacy. These algorithms must be able to produce individualized suggestions based on user preferences and previous interactions, in addition to providing accurate size evaluations and directing users to the best fit. The effectiveness of these AI algorithms will influence the system's capacity to deliver precise and worthwhile insights, improving the user experience as a whole.

Database scalability becomes a crucial technical limitation as *Virtual Glamour* prepares to scale and support a rising inventory of apparel items and a growing user base. Without losing performance or responsiveness, the database must be able to handle the growing volume of data, including user profiles, apparel attributes, historical

data, and weather information. The database architecture's ability to scale is essential for maintaining effective service even during times of heavy demand.

A distinct set of technological difficulties must be overcome for weather-responsive notifications to be successfully implemented. For location tracking and weather data collection, these notifications rely on the integration of external Application Programming Interfaces (APIs) [5]. These API integrations must function flawlessly and consistently, providing real-time weather data to improve the system's suggestions. To deliver on the promise of season-responsive apparel suggestions, it is crucial to make sure that these external services operate consistently and accurately in various geographic regions.

Virtual Glamour also investigates cutting-edge AI-driven capability to suggest apparel based on users' facial expressions. In order to do this, Google Cloud Vision AI is used to evaluate user-provided photos and identify emotional expressions like pleasure, grief, or anger as Fig.1. The integration of this technology demands that the system and outside services like Google Cloud Vision AI work together seamlessly. Delivering specialized clothing recommendations in line with users' emotions presents a technical difficulty in ensuring that the image analysis [4] is correct and real-time.

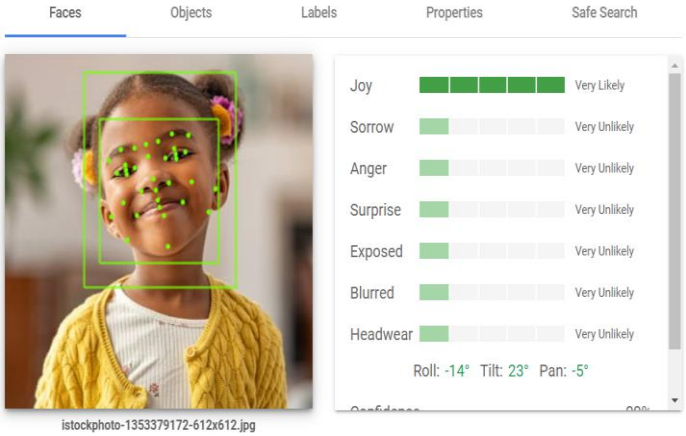


Fig. 1 Example of using Google cloud vision AI

Therefore, *Virtual Glamour*'s technical limitations highlight how complicated and multifaceted its development was. By addressing these limitations, such as choosing the best AR technology, scaling the database, and integrating external APIs, it is possible to create a system that not only meets but also exceeds user expectations, providing a dynamic and immersive shopping experience unlike any other in the world of online fashion retail.

The *Virtual Glamour* system's real-time processing capacity is a crucial element that directly affects the user experience. A seamless and immersive shopping experience requires the capacity to give immediate feedback during virtual try-on sessions, size evaluation, and weather-responsive suggestions.

Real-time processing [5]in the context of virtual try-on refers to the requirement for the system to react instantly as users engage with the program, altering and experimenting with various clothing items. To ensure that the virtual clothing moves and adjusts in real-time with the user, the AR technology used to overlay apparel over the user's image must function with low latency. Users must be able to precisely judge how the apparel fits and appears in order to simulate the experience of trying on clothing in a physical store.

Real-time processing for size evaluation entails quickly comparing the user's measurements with the standard size chart and giving prompt feedback. Based on their individual proportions, users should promptly be informed whether a specific piece of clothing will fit well, be too tight, or be too baggy. Users must quickly and accurately assess their size in order to make timely, confident sizing decisions.

This includes tracking the user's position and keeping an eye on the weather for suggestions that are weather-responsive. As soon as the weather changes, the system should update its wardrobe suggestions accordingly, giving consumers the most recent information on what to wear. For consumers to be able to adjust to changing weather conditions and make wise wardrobe decisions, timeliness in this context is essential.

The user experience of the application is significantly shaped by its user interface (UI). To ensure that customers can quickly input measurements, view apparel comparisons, and receive recommendations without any difficulty or aggravation, it is crucial to design an intuitive and user-friendly interface.

The user interface (UI) should provide a simple and effective approach for entering measurements [3]. Users should be assisted in providing their measurements by clear instructions and, if necessary, visual aids. To serve a

varied user base, the interface should support a range of measurement formats. Users should be able to save and update their measurements on the system as well, for convenience.

The UI should provide side-by-side 3D models of the clothing items in a clear and appealing way while viewing clothing comparisons. Users should be able to explore the details, zoom in, and rotate these models with ease in order to make knowledgeable selections. Information about clear price and feature comparisons should be easily available.

Recommendations should be presented in an organized and aesthetically pleasing manner via the UI. With opportunities to customize and filter recommendations depending on their tastes, users should be able to browse and explore suggested apparel products with ease. An attractive and simple user interface (UI) improves the overall user experience and motivates users to interact with the system more actively.

To optimize accessibility and reach a large user base, cross-platform interoperability is essential. Mobile phones, tablets, and maybe virtual reality (VR) headgear must all work in unison to make *Virtual Glamour* a reality.

The system should be adapted for both the iOS and Android platforms for smartphones and tablets so that users of different mobile devices can access and use the program without any issues. The user interface (UI) should adjust to various screen sizes and orientations while preserving usefulness and aesthetic appeal.

The system should be created with scalability in mind in order to account for eventual compatibility with VR headsets. Although mobile devices may be the main focus, a solid foundation should be established so that compatibility with VR platforms can be added in the future. By enabling consumers to fully immerse themselves in a virtual clothing store atmosphere, this may expand the scope of the virtual try-on experience.

In essence, the success of *Virtual Glamour* is largely due to real-time processing, user interface design, and cross-platform interoperability. Regardless of the device they select, these technical features guarantee that consumers can effortlessly interact with the system, making knowledgeable apparel selections and delighting in a user-friendly and immersive shopping experience.

According to the above facts, *Virtual Glamour* is developed as an innovative system that provides a smart approach for selling and buying clothes. The system consists of several key stages that contribute to the creation of a comprehensive and effective system.

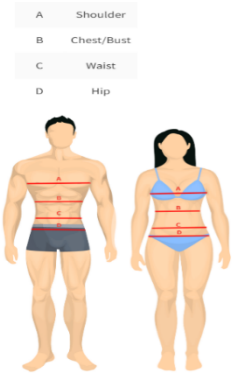
IV. Proposed System

The *Virtual Glamour* web application is a platform that integrates augmented reality, artificial intelligence, and location-based services to enhance the clothing selection and buying experience. The features are as follows:

- Virtual try-on experience with selecting the clothes.
- The price comparison using 3D model.
- Accurate size assessment.
- Weather-responsive recommendations
- Personalized suggestions

The proposed system presents three different alternatives to consumers who exhibit interest in using the virtual design feature to suit personal preferences, presents three different alternatives to consumers who exhibit interest in using the virtual design feature to suit personal preferences:

A. Selecting the size using a size chart.



Size (Inches)	Shoulder	Chest/Bust	Waist	Hip
2XS	14.5	31 - 33	22 - 24	32 - 33
XS	15	33 - 35	25 - 26	34 - 35
S	15.5	35 - 37	27 - 29	36 - 37
M	16	36 - 38	30 - 32	38 - 40
L	16.5	38 - 41	33 - 35	41 - 43
XL	17	42 - 45	36 - 39	44 - 46
2XL	17.5	46 - 50	40 - 44	47 - 49
3XL	18	50 - 55	47 - 49	50 - 52

Fig. 2 Usual size selection option

This allows consumers to manually enter their preferred sizes Fig.2 by choosing from a range of typical sizing options, including M, L, XL, and more [3]. This simple method enables customers to move forward with the virtual design experience quickly based on their established size preferences. A pre-created model will be shown for fit-on clothes.Entering the manual body measurements.

Before introducing the size chart, *Virtual Glamour* goes through a study process, pulling ideas from already-existing size charts and gathering information to design a unique size chart as Fig.3 that works in perfect harmony with the system's capabilities. The system's size assessments use this size chart as their primary point of reference.

The size chart enables *Virtual Glamour* to undertake conditional checks and measurements, ensuring that the clothing items suggested to users are not only fashionable but also properly fitted to their individual proportions. This dedication to accurate size promotes user confidence in the experience of a virtual try-on and lessens the long-standing problem of fit in online apparel shopping.

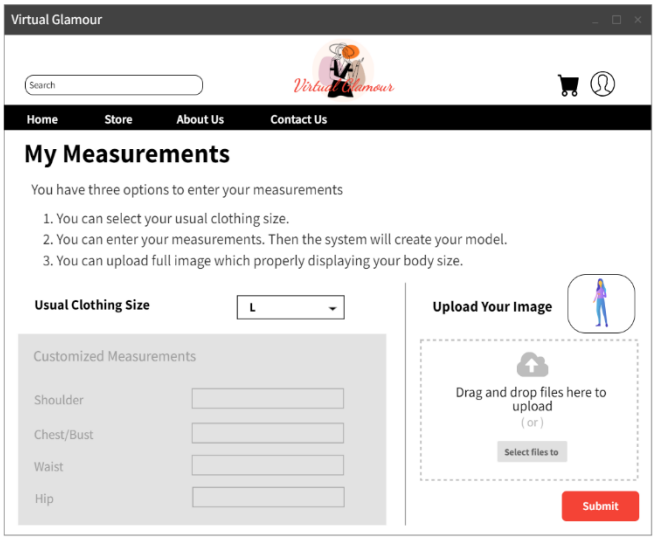


Fig. 3 Size chart

B. Entering the manual body measurements.

The users can input their actual body measurements [3] for shoulder, waist, bust/chest, and hip in inches as Fig.4. Then the system will generate a customized 3D model according to the measurements.

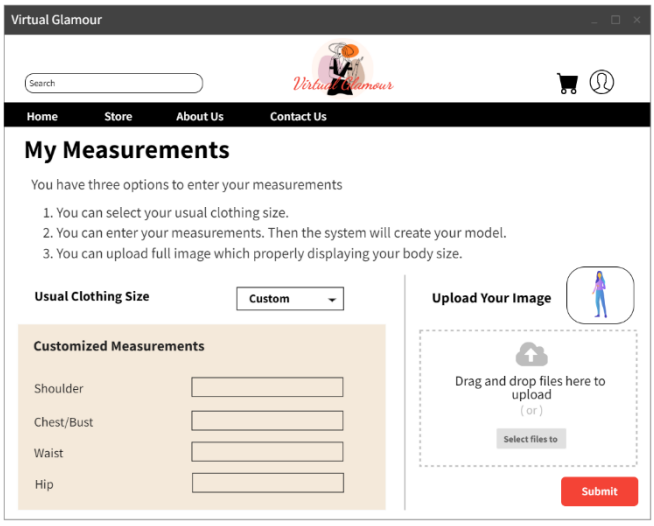


Fig. 4 Customized measurements option

C. Uploading a full body image

The users can upload a clear, full-body image. The system will detect the key points of the body [4] and generate a 3D model based on the calculated measurements of the picture using Google Cloud Vision AI.

The *Virtual Glamour* system's creative use of users' facial emotions to provide tailored outfit suggestions is one of its ground-breaking features. Users benefit from a distinctive and emotionally impactful purchasing experience due to this feature's engagement and dynamic nature.

When users are given the option to engage with the system more deeply by uploading a photo of their emotion. The cutting-edge image analysis engine Google Cloud Vision AI is used by *Virtual Glamour* to identify a variety of emotions in the uploaded image. This involves recognizing feelings like happiness, sadness, rage, and others.

The intuitive and user-friendly design of the user interface makes it possible for users to upload a photograph that accurately captures their present emotional or mental state. According to the sophisticated capabilities of Google Cloud Vision AI, the image analysis is quick and effective, resulting in a seamless and in-the-moment engagement.

The *Recommendations Based on Face Expression* function is a cornerstone of the *Virtual Glamour* experience thanks to its effective fusion of cutting-edge technology, emotional resonance, and user-friendly advice. It emphasizes the system's dedication to providing not only fashionable apparel suggestions but also a highly tailored and emotionally rewarding tour through the world of fashion as in Fig.5.

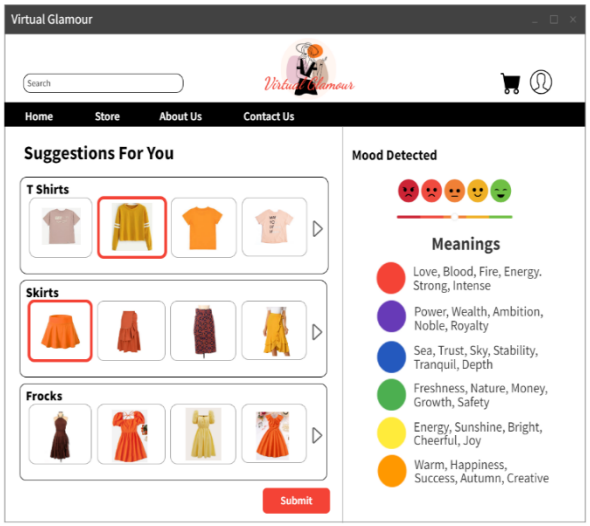


Fig. 5 Feature of facial expression recommendations

The *Virtual Glamour* system's goal is to give users thorough and knowledgeable buying experiences. The straightforward and intuitive "price comparison" tool is another main elements that supports this empowerment. This feature seeks to make it easier for customers to compare different clothing goods, enabling them to make wise judgments before making a purchase.

Each product card will have a prominent and accessible *Compare* button for users to use. The user's entry point into the comparison process is this button. Users may easily access the specialized comparison area by clicking the "Compare" button, which works similarly to how the "Favorites" section does.

Users are shown a choice of the products they have chosen to compare on the comparison page. Each listed product is assigned to the 3D model when the user taps on the product. Two 3D models are used to show the comparison of the clothing combinations as Fig.6. The total price is also calculated and displayed. This uncomplicated method promotes flexibility and customization in the comparison process by allowing customers to pick and choose the exact items they desire.

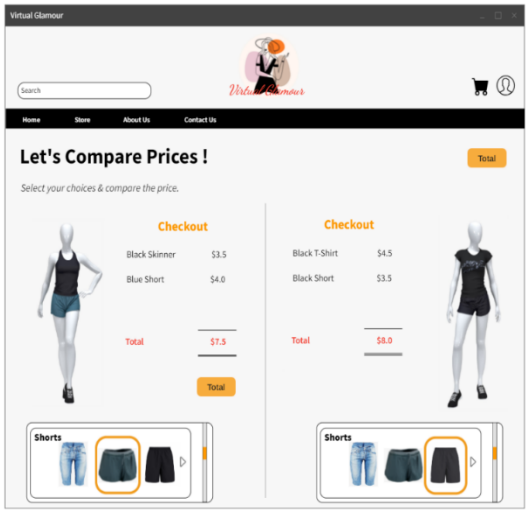


Fig. 6 Feature of size comparison

This feature being added to the *Virtual Glamour* system is in line with its main objective of giving people a comprehensive and empowered buying experience. The technology gives consumers the ability to directly compare products, enabling them to evaluate not just price differences but also the distinctive qualities of each item. This encourages wise purchasing choices and guarantees that customers are confident in and pleased with their wardrobe choices.

The "Price Comparison" function is a prime example of *Virtual Glamour's* dedication to user-centric design and improving the fashion industry's decision-making process. Comparing apparel becomes a simple, illuminating experience instead of a difficult, time-consuming activity, ultimately enhancing the user experience as a whole.

V. DISCUSSION

The *Virtual Glamour* system is a groundbreaking solution which can address some of the many specific challenges faced by online clothing shoppers. In this system, augmented reality, artificial intelligence and location-based services have been integrated. *Virtual Glamour* has revolutionized the entire online clothing retail experience and it has the potential to reshape the landscape of online shopping [1].

The main goal of this system is to enhance the experience a user would have and streamline the online shopping process. With the help of AR technology, users can virtually try on clothes, which would allow them to visualize how garments will fit their unique body shape and style preferences. The frustration associated with ill-fitting clothes will be significantly reduced with this feature. It would lead to fewer clothes returns as well. Ultimately, this would result in happier customers [3]. Furthermore, the algorithm which has been inserted to the system will provide personalized recommendations based on user preferences. This approach will not only simplify the outfit selection process, it will also help the user discover clothing items that their taste prefers. Additionally, the weather-responsive recommendation will make sure that users are always notified of changing weather conditions and how to adapt to them. This feature aims to improve user experience by offering relevant clothing suggestions in real-time.

In summary, *Virtual Glamour* shows massive technological advancements in the world of online fashion retail. Combining the immersion strengths of AR, with the intelligence of AI has created a seamless and enjoyable shopping experience for customers. Increased user engagement, reduced returns, and enhanced customer loyalty are expected as results of this application.
Fig. 6 [1]below shows how users can virtually try on clothes, receive specific recommendations, and access real-time weather-responsive suggestions, all within one user-friendly interface.

VI. CONCLUSION

Virtual Glamour is a state-of-the-art system which includes groundbreaking advancements in the online fashion retail field. It provides solutions for critical challenges faced by customers. Seamlessly integrating augmented reality, artificial intelligence, and location-based services have allowed this platform to transform the online shopping experience[8]. Through virtual try-on experiences, personalized recommendations, accurate sized recommendations, and weather-responsive suggestions, *Virtual Glamour* is on the front line to enhance user engagement, reduce returns, and increase customer loyalty [8].

From this system, a significant reduction in the frustration and hassle associated with ill-fitting garments are expected. Additionally, the personalized recommendations and price comparison feature are anticipated to give power to users to make more confident purchasing decisions [8]. Furthermore, the system's ability to assess changing weather conditions and provide real-time wardrobe suggestions depict massive improvement in online retail. This feature is expected to enhance the user experience and ensure that consumers are well-prepared for any weather scenario [9]. *Virtual Glamour* opens doors to further research and development opportunities. Future research could explore the scale of the system to accommodate a bigger clientele wider range of clothing brands. Additionally, research and development into the integration of virtual reality (VR) headsets and the potential expansion into other sectors of e-commerce beyond fashion retail could be possible avenues for exploration [10].

In summary, *Virtual Glamour* promises to bring state-of-the-art online fashion retail, offering an immersive, personalized, and convenient shopping experience. Further research and development in this field hold the opportunity to change the future of e-commerce and customer satisfaction.

REFERENCES

[1] N. Z. Hashmi, A. Irtaza, W. Ahmed and N. Nida, "An augmented reality based Virtual dressing room using Haarcascades Classifier," *2020 14th International Conference on Open Source Systems and Technologies (ICOSST)*, Lahore, Pakistan, 2020, pp. 1-6

[2] K. Srinivasan and S. Vivek, "Implementation of virtual fitting room using image processing," *2017 International Conference on Computer, Communication and Signal Processing (ICCCSP)*, Chennai, India, 2017, pp. 1-3

[3] W. S. W. P. N. M., R. R. M. D. D., S. L. G. I., G. H. S. D. N., D. R. Wijendra and D. I. De Silva, "Virtual Dressing Room: Smart Approach to Select and Buy Clothes," *2021 3rd International Conference on Advancements in Computing (ICAC)*, Colombo, Sri Lanka, 2021, pp. 193-198

[4] I. C. S. Ileperuma, H. M. Y. V. Gunathilake, K. P. A. P. Dilshan, S. A. D. S. Nishali, A. I. Gamage and Y. H. P. P. Priyadarshana, "An Enhanced Virtual Fitting Room using Deep Neural Networks," *2020 2nd International Conference on Advancements in Computing (ICAC)*, Malabe, Sri Lanka, 2020, pp. 67-72

[5] Y. Zhu *et al.*, "Personalized Custom Virtual Fitting Display Method," *2022 12th International Conference on Information Technology in Medicine and Education (ITME)*, Xiamen, China, 2022, pp. 180-183.

[6] S. Hauswiesner, M. Straka and G. Reitmayr, "Image-based clothes transfer," *2011 10th IEEE International Symposium on Mixed and Augmented Reality*, Basel, Switzerland, 2011, pp. 169-172

[7] A. Masri and M. Al-Jabi, "Virtual Dressing Room Application," *2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT)*, Amman, Jordan, 2019, pp. 694-698

[8] Kim, S. Lee, H., & Park, C., "Artificial Intelligence for Personalized Fashion Recommendations: A Review and Future Directions," *International Journal of Computer Science and Information Technology*, 2023.

[9] Y. L. Q. &. W. Z. Chen, "Location-Based Services in E-commerce: Opportunities and Challenges.," *Journal of Electronic Commerce Research*, 2023.

[10] J. R. &. J. L. K. Smith, "Augmented Reality in Fashion Retail: Enhancing the Online Shopping Experience.," *Journal of Retail Technology*, 2023.