PROJECT PROPOSAL ON

"Caffeine Overflow's - Ai driven virtual try-on system in E-commerce"

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1. Abstract

The **Ai driven virtual try on system in E-commerce** project presents an AI-driven virtual try-on system designed to enhance the e-commerce experience by enabling users to visualize clothing items in real-time. By utilizing advanced computer vision and machine learning techniques, the system generates accurate 3D models from 2D images of garments, allowing users to virtually try on clothes either through uploaded photos or live camera feeds. The incorporation of augmented reality (AR) enables a dynamic fitting experience, where users can interact with the virtual model and view how clothing fits from different angles. Additionally, machine learning algorithms analyze user preferences and body types to offer personalized fashion recommendations. This seamless integration of AI technologies aims to bridge the gap between physical and online shopping, reducing return rates and improving customer satisfaction.

2. Introduction

The rapid growth of e-commerce has fundamentally changed the way consumers shop for products, particularly in the fashion industry. With more brands transitioning to online platforms, consumers are increasingly relying on digital shopping experiences. However, one significant drawback that remains in online fashion shopping is the inability to physically try on clothing before making a purchase. This limitation has contributed to high return rates and customer dissatisfaction, as customers often receive items that do not fit as expected or appear different from their online representation. Addressing this challenge requires innovative solutions that mimic the in-store shopping experience while leveraging the convenience of online retail.

One promising solution is the **virtual try-on system**, which allows users to visualize how clothing will fit on their body before making a purchase. By combining **computer vision**, **machine learning**, and **augmented reality (AR)**, these systems provide a way for users to interact with garments digitally. Through **AI-generated 3D models**, virtual try-on systems enable users to "wear" clothing in real-time, offering a more immersive and engaging shopping experience. This technology is gaining traction as consumers seek more interactive and personalized online shopping environments.

The emergence of virtual try-on technology addresses two of the most critical challenges in online fashion retail: the **lack of tactile feedback** and the **fit uncertainty** that comes with purchasing clothes online. Traditional product images and size charts often fail to provide accurate representations of how garments will look and feel on individual consumers, leading to confusion and frustration. With virtual try-on systems, shoppers can get a better understanding of the fit, style, and look of clothing before making a purchase. This also benefits retailers by reducing the frequency of returns, which is a common and costly issue in the online retail space.

This project focuses on developing an **AI-driven virtual try-on system** specifically designed for e-commerce platforms. The system will allow users to upload photos or use a live camera feed to try on clothing items virtually. The core technology relies on **AI-generated 3D models** of garments, which are then overlaid onto the user's image or live

feed using **augmented reality**. By incorporating **computer vision algorithms** such as **pose estimation** and **body segmentation**, the system ensures that the clothing items are accurately fitted to the user's body. Additionally, the system leverages **machine learning algorithms** to analyze user preferences and provide personalized fashion recommendations, further enhancing the shopping experience.

The integration of **augmented reality** into e-commerce platforms offers a dynamic and interactive shopping experience, allowing users to move and view garments from different angles as if they were physically trying them on. This not only adds a layer of immersion to the shopping process but also helps users make more informed purchasing decisions. The implementation of **real-time 3D model generation** ensures that users receive accurate visual representations of clothing items, addressing common issues like size discrepancies and unrealistic product photos.

Furthermore, the project aims to incorporate a **recommendation engine** powered by **machine learning** to enhance personalization. As users engage with the virtual try-on system, their preferences and behaviors will be analyzed to suggest clothing items that best fit their style, body shape, and previous purchases. By combining this with the **virtual try-on experience**, the system creates a more personalized and data-driven approach to online shopping, increasing customer satisfaction and fostering brand loyalty.

This project holds immense potential to transform the e-commerce landscape by offering a more interactive, personalized, and engaging shopping experience. With the fashion industry becoming increasingly digital, providing customers with an innovative solution that addresses the traditional pain points of online shopping—such as fit and appearance—will be crucial for businesses looking to remain competitive. This AI-driven virtual try-on system not only benefits customers by providing a realistic and personalized shopping experience but also aids retailers by reducing return rates and increasing conversion rates. The system will ultimately bridge the gap between in-store and online shopping, creating a seamless blend of convenience and interaction.

In summary, the proposed virtual try-on system will leverage **AI**, **AR**, and **machine learning** to create an intuitive, user-friendly platform for e-commerce fashion retailers. By enabling users to interact with clothing items in real-time and providing personalized recommendations, this system will improve the overall shopping experience, benefiting both consumers and businesses alike. Through continuous development and optimization, the virtual try-on system could become a key feature in the future of online retail.

3. Literature Review

The integration of virtual try-on systems into e-commerce has gained significant attention in recent years, driven by advances in machine learning, computer vision, and augmented reality. Several research papers have explored different aspects of virtual try-on technology, ranging from AI-driven garment generation to personalized recommendation systems. This literature review highlights the key findings from **some research papers** that inform the development of this project.

i. DeepFashion: Powering Robust Clothes Recognition and Try-on Systems [1]

Strengths:

This paper introduces DeepFashion, a large-scale clothing dataset that supports various tasks such as clothes recognition, attribute prediction, and clothes retrieval. The dataset is a valuable asset for training deep learning models in virtual try-on systems as it provides labeled images of clothing items, enabling accurate recognition and fitting. The paper's focus on pose estimation and clothes matching algorithms makes it particularly useful for virtual try-on systems, ensuring that garments are realistically aligned with the user's body.

Weaknesses:

One limitation is that DeepFashion primarily focuses on 2D image analysis and recognition tasks, which may not be fully applicable when generating realistic 3D models for virtual try-ons. Additionally, the dataset does not account for the dynamic behavior of fabric, which is crucial for improving the realism of garment fitting in 3D environments.

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ii. AI-Powered Personalized Fashion E-Commerce Systems [2]

Strengths:

This paper explores how AI-based recommendation systems can improve personalization in e-commerce. The authors developed a machine learning model that suggests clothing based on a user's historical preferences and purchase patterns. This enhances customer satisfaction and helps drive higher engagement. The recommendation engine is scalable

and adaptable to different user datasets, making it a robust tool for personalization in e-commerce fashion.

Weaknesses:

The paper lacks a comprehensive discussion on the integration of virtual try-on systems with the recommendation engine. While the AI personalization is valuable, the paper does not focus on how these recommendations could be visualized or tried on virtually, which limits its direct applicability to a virtual try-on system that emphasizes interaction and visual feedback.

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iii. AnyFit: A Unified Model for Realistic 3D Garment Fitting in Virtual Environments

Source: https://colorful-liyu.github.io/anyfit-page/static/my_fig/AnyFit_Arxiv.pdf

Strengths:

This paper introduces AnyFit, a system capable of generating realistic 3D garment models from 2D images. The system allows users to upload their body measurements or use default sizes, and the AI will fit the garments accurately on a 3D avatar. The strength of AnyFit lies in its ability to account for fabric dynamics, such as draping and folds, which enhances the realism of the virtual try-on experience.

Weaknesses:

The computational complexity of the model is a significant limitation, as it requires substantial processing power for real-time fitting. This makes it difficult to implement in a scalable e-commerce setting where rapid user interactions are required. Additionally, the paper does not address personalization through machine learning, which is essential for a fully immersive and customized virtual try-on experience.

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iv. Towards a Unified Framework for Virtual Try-On Applications [3]

Source: https://link.springer.com/chapter/10.1007/978-3-031-50072-5_23

Strengths:

This paper outlines a unified framework for building virtual try-on systems, combining pose estimation, fabric simulation, and user interaction. It proposes a modular approach where individual components, such as clothing models, user avatars, and background environments, can be adjusted independently. This modularity makes the system flexible and adaptable to different platforms and use cases.

Weaknesses:

The primary limitation is the lack of focus on real-time processing. While the modularity is beneficial, the system's performance in real-time applications is not thoroughly evaluated. This makes it less suitable for e-commerce, where users expect rapid interactions without delays. Furthermore, the paper focuses more on the technical architecture rather than on improving user experience through personalization or dynamic garment behavior**.**

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v. Robust 3D Garment Digitization from Monocular 2D Images

Source:https://openaccess.thecvf.com/content/WACV2022/papers/Majithia_Robust_3D_Garment_Digitization_From_Monocular_2D_Images_for_3D_WACV_2022_paper.pdf

Strengths:

This paper presents a method for 3D garment digitization from a single 2D image, providing a cost-effective solution for generating 3D clothing models. The approach is robust and does not require a multi-camera setup, making it suitable for online retailers who need a simple yet effective solution for creating 3D garment models. The model is capable of capturing fine details, such as textures and seams, which enhances the accuracy of virtual try-on systems.

Weaknesses:

While the model is effective for static garment images, it does not account for how garments behave when worn or in motion. The absence of fabric dynamics makes it less suitable for real-time interaction in virtual try-on systems. Moreover, the paper does not discuss how the digitized garments can be personalized for users with different body types or preferences, which is a key component of enhancing the e-commerce shopping experience.

The reviewed papers provide a comprehensive view of the current state of virtual try-on technologies. **DeepFashion** and **AI-powered personalization systems** focus on improving recognition and user recommendations, while **AnyFit** and **Robust 3D Garment Digitization** address the technical challenges of creating realistic 3D models. However, limitations such as **computational complexity** and the lack of **real-time interaction** are common across these papers. For the proposed project, combining the strengths of these approaches—such as **personalization**, **real-time AR interaction**, and **accurate 3D garment modeling**—will ensure a seamless, user-friendly experience in virtual try-on systems for e-commerce.

4.Motivation

The motivation behind choosing this topic stems from the rapid growth of e-commerce and the increasing demand for personalized and interactive shopping experiences in the retail industry. Online shopping has become a dominant force in retail, but one of the most significant challenges for consumers is the inability to physically try on clothing before making a purchase. This often leads to a high volume of product returns due to poor fit or dissatisfaction with the item's appearance, resulting in negative customer experiences and increased operational costs for retailers.

The concept of virtual try-on systems offers a promising solution to these challenges. By leveraging artificial intelligence (AI), computer vision, and augmented reality (AR), these systems can provide users with a dynamic and engaging way to try on clothes virtually, offering them a near-physical shopping experience from the comfort of their homes. The idea of creating a system that allows users to interact with 3D models of clothing, visualize how garments will look and fit on their bodies, and receive personalized recommendations aligns with the need to bridge the gap between physical and online shopping experiences.

The inspiration for this project also comes from the desire to enhance customer satisfaction by reducing the uncertainty surrounding online purchases. Providing a system that enables customers to visualize garments in real-time helps them make informed decisions, improving overall confidence in their purchases. Additionally, the use of AI-driven personalization to recommend clothing items based on users' preferences, body shapes, and styles adds value to the shopping experience, making it more tailored and user-centric. Another key motivator for selecting this topic is the technological innovation involved. The fusion of AR, machine learning, and 3D modeling presents an opportunity to work with cutting-edge technologies and apply them to a real-world problem. This project offers a chance to explore the potential of real-time virtual interactions and the practical application of AI in the fashion and retail sectors. By developing an AI-driven virtual try-on system, this project contributes to advancing the state of e-commerce, pushing the boundaries of how technology can transform the shopping experience.

In conclusion, the motivation behind this project is driven by the desire to tackle the current limitations of online fashion shopping, improve customer satisfaction, and explore the exciting possibilities that AI and AR bring to e-commerce. This topic is not only relevant to current industry trends but also offers a creative and innovative solution that can have a lasting impact on both consumers and retailers.

5.Goal

The primary aim of this project is to develop an AI-driven virtual try-on system that enhances the e-commerce shopping experience by enabling users to visualize how clothing items will look and fit on their bodies in real-time. This system leverages cutting-edge technologies, such as artificial intelligence (AI), computer vision, and augmented reality (AR), to create a seamless and immersive shopping experience for users.

The specific goals of the project are as follows:

I. **Develop an AI-Driven Virtual Try-On Platform:**
Create a system where users can upload their photos or use live camera feeds to virtually try on clothing items. The platform will use AI-generated 3D models of garments and overlay them on the user's image using AR technology, offering a near-physical try-on experience.

II. **Enhance Fit Accuracy Through Computer Vision:**
Implement computer vision algorithms to accurately detect the user's body shape and pose, ensuring that the clothing fits naturally and realistically. The system will account for body posture, pose adjustments, and body measurements to provide a precise fit.

III. **Provide Personalized Clothing Recommendations:**
Utilize machine learning algorithms to analyze user preferences, body types, and past shopping behaviors to recommend clothing items tailored to individual tastes and needs. This will improve the overall shopping experience by offering relevant, personalized suggestions.

IV. **Integrate Augmented Reality for Real-Time Interaction:**
Develop an AR-based solution that allows users to interact with virtual garments in real-time, view them from multiple angles, and adjust the fit. This dynamic interaction will help users make better-informed purchase decisions.

V. **Reduce Product Return Rates:**
By allowing users to try on clothes virtually and experience how they look and fit, the system aims to reduce the rate of product returns, which is a common issue in online shopping due to size or fit dissatisfaction.

VI. **Seamless Integration with E-Commerce Platforms:**
Ensure the virtual try-on system can be easily integrated into existing e-commerce platforms, providing retailers with a powerful tool to engage customers and enhance the online shopping experience.

VII. **Optimize User Experience:**
Focus on creating a user-friendly interface that ensures smooth navigation, quick garment try-ons, and a streamlined shopping process, making the system accessible and enjoyable for a wide range of users.

The ultimate goal of this project is to bridge the gap between traditional in-store shopping and online shopping by offering a realistic, engaging, and personalized virtual try-on experience, thereby transforming the way users shop for fashion online.

6. Application of the project in real life

The AI-driven virtual try-on system has numerous practical applications in real-world e-commerce, particularly in the fashion and retail sectors. By leveraging artificial intelligence (AI), augmented reality (AR), and machine learning, this project can significantly transform the way consumers interact with online fashion stores, providing tangible benefits for both customers and retailers.

A. Enhancing the Online Shopping Experience

One of the most immediate applications of this system is its ability to enhance the customer experience in online fashion stores. Customers often hesitate to purchase clothing online due to uncertainty about how it will fit or look on them. This system allows users to upload their photos or use a live camera feed to see how garments would appear on their bodies in real time. By offering a more immersive and interactive shopping experience, this application can:

- Increase user confidence in making purchases, leading to higher sales.
- Reduce the likelihood of product returns due to size or fit issues, which is a common problem in the fashion industry.

B. Reducing Product Returns and Operational Costs

Product returns due to poor fit or inaccurate representations of clothing are a major challenge for online retailers, resulting in significant logistical and financial costs. The virtual try-on system addresses this issue by allowing customers to try on clothes virtually before making a purchase, ensuring that the size and fit match their expectations. This has several benefits:

- Lower return rates, reducing the burden on logistics and inventory management.
- Cost savings for retailers, as fewer returns translate to lower shipping and processing costs.
- Sustainability, as fewer returns lead to less environmental impact due to reduced transportation and packaging waste.

C. Personalized Shopping and Increased Customer Engagement

The virtual try-on system can be integrated with personalized recommendation engines that use machine learning to suggest clothing based on the user's preferences, body type, and past

purchases. This level of personalization enhances customer satisfaction by offering tailored suggestions that match their style and fit requirements. In real life, this leads to:

- Higher customer engagement and longer time spent on the platform, as users explore clothing items that are specifically recommended for them.
- Increased brand loyalty, as customers appreciate the personalized shopping experience that caters to their unique needs and preferences.

D. Revolutionizing Fashion Retail with Augmented Reality

Incorporating augmented reality (AR) into e-commerce platforms allows retailers to provide a real-time, interactive shopping experience. This can be applied in various ways:

- Users can interact with 3D models of clothing, view them from different angles, and assess how the garment moves and fits in real time.
- Retailers can implement AR-based shopping experiences in physical stores, where customers can try on clothes digitally without needing to enter a fitting room, adding convenience and reducing in-store congestion.

E. Broadening Accessibility for Diverse Audiences

The virtual try-on system can be a powerful tool for inclusive shopping, particularly for individuals with disabilities or those who cannot physically visit stores. The ability to try on clothes virtually from home broadens access to fashion, allowing everyone to enjoy a full shopping experience regardless of their location or physical abilities. This can lead to:

- Increased sales reach by targeting a broader audience, including those in remote areas or with mobility challenges.
- Improved accessibility and inclusivity, making fashion available to a diverse demographic.

F. Digital Fashion Shows and Virtual Pop-Up Stores

Fashion brands can use the virtual try-on system to host digital fashion shows or virtual pop-up stores. In these virtual environments, users can interact with garments and even "wear" them through the AR interface without attending physical events. This application provides opportunities for:

- Brands to showcase new collections globally, reaching wider audiences without the limitations of physical space.
- Interactive marketing campaigns that engage users by allowing them to experience new products firsthand in a virtual setting.

G. Data-Driven Insights for Retailers

With the integration of machine learning algorithms, the system collects valuable data on customer preferences, behavior, and purchasing patterns. Retailers can analyze this data to:

- Optimize product offerings, stocking more of the items that users prefer and phasing out less popular designs.
- Personalize marketing strategies, using data insights to target customers with relevant promotions and product suggestions.

In real life, this AI-driven virtual try-on system revolutionizes the online fashion shopping experience by offering a real-time, interactive, and personalized platform. It not only benefits customers by improving the shopping experience and increasing confidence in their purchases but also helps retailers by reducing return rates, lowering operational costs, and increasing customer engagement. With its broad range of applications, this project is set to have a lasting impact on both consumers and the e-commerce fashion industry.

7. Tools Needed

I. TensorFlow/Keras:

- These frameworks will be used to develop the machine learning models that power the virtual try-on system, including 3D model generation and personalized recommendation algorithms.

II. OpenPose/DensePose:

- These are computer vision tools used to estimate body pose and key points, which will ensure that the garments fit naturally on the user's image or live feed.

III. Three.js/WebGL:

- These tools are used for 3D rendering in web browsers, allowing users to view and interact with the 3D clothing models in real-time.

IV. Flask/Django:

- These backend frameworks will manage the server-side operations of the virtual try-on system, including user authentication, product storage, and integration with the machine learning models.

V. React:

- A front-end JavaScript library used to build the user interface of the e-commerce platform, enabling smooth navigation, garment selection, and virtual try-on interactions.

VI. Augmented Reality SDK (ARKit/ARCore):

- These AR development kits will be used to integrate augmented reality features into the platform, allowing users to interact with virtual garments overlaid on their image or camera feed.

VII. Python:

- The programming language will be used for building machine learning models, integrating APIs, and backend operations.

8. Tentative schematic diagram

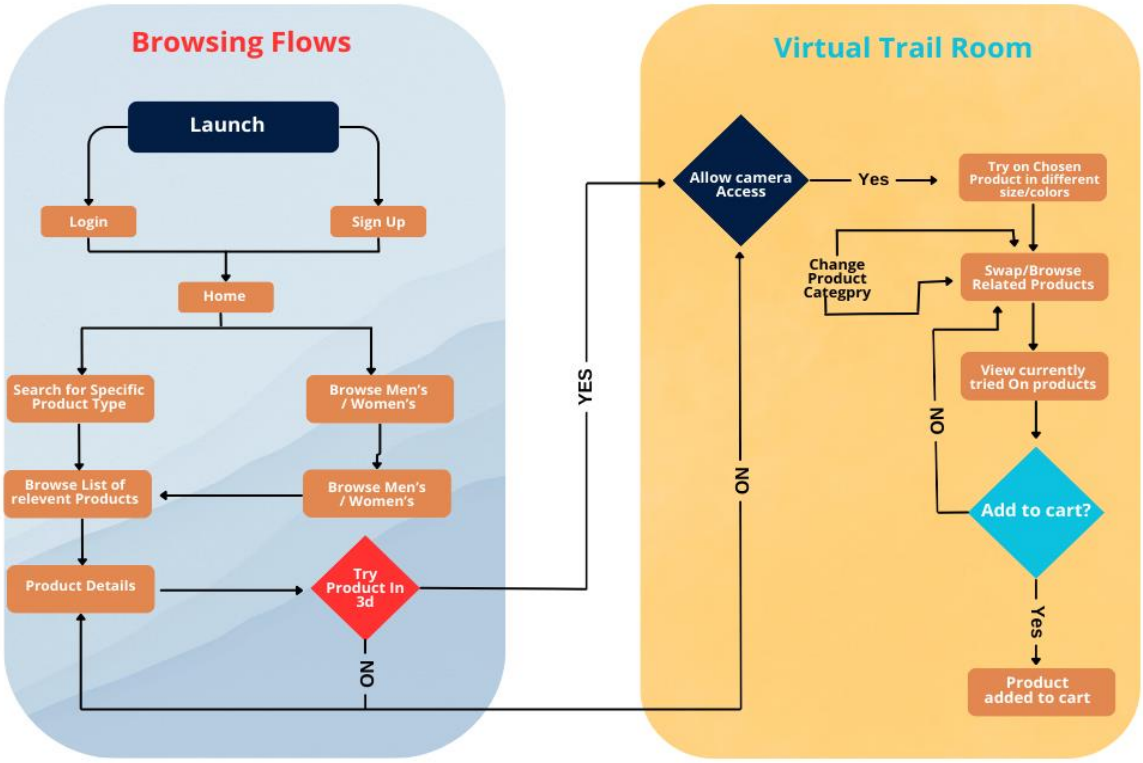

Figure 1:

Flow Chart Explanation:

Browsing Flows

I. **Launch**: The process starts when the user launches the application.

II. **Log In / Sign Up**: The user can either log in to an existing account or sign up for a new one.

III. **Home**: After logging in or signing up, the user lands on the home page.

IV. **Search or Browse**: From the home page, the user has the option to:

- Search for a specific type of product.
- Browse products based on gender (Men's/Women's).

- Browse by category (such as tops, bottoms, etc.).

V. **Browse List of Relevant Products**: Depending on the previous choice, a list of relevant products is displayed.

VI. **Product Details**: Selecting a product takes the user to the product details page.

VII. **Try Product in 3D**: The user has an option to try the product in a 3D view, although this path seems to end here and doesn't loop back into the flow.

Virtual Trial Room

I. **Allow Camera Access?**: If the user chooses to try the product in a virtual trial room, they must allow camera access.

II. **Try on Chosen Product**: Upon granting camera access, the user can try on the chosen product in different sizes or colors.

III. **Change Product Category**: Users can change the product category without leaving the trial room.

IV. **Swipe/Browse Related Products**: Users can swipe through or browse related products.

V. **View Currently Tried On Products**: There is an option to view products that are currently being tried on.

VI. **Add to Cart?**: After trying on products, the user can decide whether to add them to the cart.

VII. **Product Added to Cart**: If the user decides to add the product to the cart, the product is added, concluding the trial room experience

9. Projected plan

Phase 1: *E-Commerce development setup, Data Collection & Dataset Preparation*

- Collect clothing images (2D) and prepare user body data. Create datasets for training AI models, such as Fashion MNIST and DeepFashion.

Phase 2*: Frontend and 3D Model Generation Development*

- Develop and train the AI model to generate 3D models from 2D images of clothing items.

Phase 3: *Backend and database, Augmented Reality Integration*

- Implement augmented reality technology (using ARKit/ARCore) to overlay the 3D clothing models onto the user's image or live camera feed.

Phase 4: *E-Commerce Integration, Augmented Reality Integration (Initial), Testing and Improvement*

- Develop the recommendation system that uses machine learning to suggest personalized clothing items based on the user's preferences and body type.

Phase 5: *E-Commerce Integration, Personalization Engine Development and testing*

- Conduct testing and debugging of the virtual try-on system to improve accuracy, usability, and performance.

Phase 6: *Final testing and launch*

- Finalize the platform by integrating the try-on system into an e-commerce environment with user authentication, cart functionality, and checkout process.

10. Projected Timeline

Week	Task	Description
Week 1	E-Commerce development setup, Data Collection, Dataset Preparation	Setup react frontend, collect datasets, clean, process and organize data for model training
Week 2	Frontend and 3D Model Generation Development	Complete dummy frontend, Develop the initial version of the AI model for converting 2D images into 3D.
Week 3	Backend and database, 3D Model Testing and Refinement	Develop and Connect backend, Test and refine the 3D model generation for better accuracy.
Week 4	E-Commerce Integration, Augmented Reality Integration (Initial), Testing and Improvement	Implement basic AR functionality to overlay 3D models onto user images, test and refine to ensuring real-time interaction.
Week 5	E-Commerce Integration, Personalization Engine Development and testing	Develop machine learning models to recommend clothing items to users, testing
Week 6	Final Testing and Launch	Perform final testing, fix any remaining issues, and launch the system.

Table 1

11. Conclusion

The AI-driven virtual try-on system has the potential to revolutionize the online shopping experience by offering users a highly personalized, interactive, and immersive way to explore products, especially in the fashion retail industry. Through the integration of advanced technologies like 3D model generation, augmented reality (AR), and machine learning (ML), this system allows shoppers to visualize how clothing, accessories, or makeup would look on their own body without physically trying them on. This not only enhances the shopping experience by providing a more accurate representation of fit, style, and appearance but also reduces the uncertainty that typically comes with online purchases. For e-commerce platforms, adopting this AI-powered virtual try-on technology can significantly boost customer engagement and satisfaction. By offering a seamless and customized shopping journey, brands can cater to individual preferences and body types, leading to fewer product returns, improved conversion rates, and increased customer loyalty. The system can also provide detailed insights into consumer behavior and preferences, allowing retailers to optimize product recommendations and inventory management. Moreover, the integration of AR and ML enables continuous improvement of the virtual try-on experience. As machine learning algorithms learn from user interactions and preferences, the system becomes more accurate and refined, offering better recommendations over time. This innovation is expected to reshape the landscape of online fashion retail by combining convenience with cutting-edge technology, ultimately bridging the gap between in-store and online shopping experiences

12. Contribution

AI/ML Development Responsibilities:

I. 3D Model Generation (Week 1–3):

- Develop and train the AI model for converting 2D images into 3D clothing models.
- Use machine learning frameworks like TensorFlow and Keras for model development.
- Test and refine the 3D models for accuracy and realism.

II. Personalized Recommendation Engine (Week 4–5):

- Build a machine learning-based recommendation system that suggests clothing items based on user preferences and past interactions.
- Use collaborative filtering and user behavior analysis to improve recommendation accuracy.

III. Data Collection and Preprocessing (Week 1–2):

- Collect and preprocess datasets (Fashion MNIST, DeepFashion) for both 3D model training and the recommendation engine.

IV. Testing and Optimization of AI Models (Week 6–7):

- Test the 3D model generation and recommendation engine on real data.
- Optimize performance and ensure seamless integration with other system components.

V. Final Integration (Week 8):

- Work with the Front-End Developer to ensure that the AI models (3D generation and recommendation) are fully integrated with the system interface.

Front-End/AR Development Responsibilities:

I. AR Integration (Week 2–4):

- Implement augmented reality (AR) using ARCore/ARKit to overlay 3D clothing models onto user images or live camera feeds.
- Ensure real-time interaction and smooth visual rendering of the AR try-on experience.

II. Front-End Development (Week 1–3):

- Design and implement the front-end of the e-commerce platform using React.
- Create user-friendly components such as the image upload, AR interface, and product pages.

III. Backend and Database Management (Week 3–4):

- Set up the backend using Flask/Django to handle user requests, product management, and system data flow.
- Ensure smooth integration between the backend and AI models developed by the AI/ML Developer.

IV. User Testing and Feedback Integration (Week 6–7):

- Collect user feedback during the testing phase and adjust the front-end for better user experience.
- Improve the user interface (UI) and fix bugs related to AR performance.

V. E-Commerce Platform Integration (Week 7–8):

- Integrate e-commerce functionalities such as cart management, checkout, and user authentication.
- Ensure seamless communication between the e-commerce system and the virtual try-on components.

Week 1	Aporbo	Zuairia
Week 2	Data collection, 3D model development	Front-end setup, AR initial integration
Week 3	3D model training and refinement	Continued AR integration, front-end development
Week 4	Complete 3D model generation, start recommendation	Backend setup, complete front-end for image uploads
Week 5	Finish recommendation system development	Integrate backend, refine AR try-on system
Week 6	Test AI models and recommendations	Begin testing AR and user interactions
Week 7	Optimize AI systems	Collect feedback, UI refinement, and AR improvements
Week 8	Final integration and deployment	Final system integration and testing

Table 2

13. Bibliography

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