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AR-Shoe Fitting System that Measure Feet and Try on Shoes

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***Abstract*— In the dynamic landscape of retail and fashion, the adoption of virtual try-on solutions, particularly augmented reality (AR), has surged, offering consumers pre-purchase product visualization. However, ensuring accurate fitting, notably in footwear, remains a persistent challenge leading to dissatisfaction and increased returns. To tackle this issue, this research introduces the Automated Augmented Reality Foot Measurement System, utilizing advanced image processing and computer vision to precisely measure foot dimensions for AR fitting. Through rigorous experimentation, the system demonstrates high accuracy, providing both consumers and retailers with a seamless and immersive experience. This innovative solution not only revolutionizes footwear purchasing but also offers valuable insights for retailers to optimize inventory and enhance customer satisfaction.**

***Keywords*— C Augmented reality, Footwear fitting, Virtual try-on, Image processing, Computer vision, Retail industry, Consumer satisfaction, Inventory optimization**

I. INTRODUCTION

In modern retail and fashion industries, virtual try-on solutions have gained significant traction, offering consumers the ability to visualize products before purchase. Among these solutions, augmented reality (AR) technologies play a pivotal role, enabling users to virtually try on various items such as clothing, accessories, and footwear. However, ensuring accurate fitting remains a challenge, especially in the case of footwear where size discrepancies can lead to dissatisfaction and product returns. To address this challenge, we introduce an advanced image processing script designed to analyze images of feet and determine their size in centimeter's for augmented reality fitting. This script leverages computer vision techniques to accurately measure foot dimensions, enabling retailers and consumers to make informed decisions regarding footwear purchases.

The Automated Augmented Reality Foot Measurement System is an innovative solution poised to revolutionize the way footwear is tried on and purchased in both physical and digital retail environments. Grounded in advanced image processing, computer vision, and augmented reality technologies, this system offers a seamless and immersive experience for consumers while providing retailers with valuable insights into customer preferences and behaviors.

II. RELATED WORK

Hiro Bizen, Minori Yoshida, Makoto Jimbu, Yasuo Kawai, "Virtual Shoe Fitting System that Uses Augmented Reality to Measure Feet and Try on Shoes", In this paper, a system that uses augmented reality to measure the size of a foot and suggest a shoe that fits the user's foot with help of visualisation. [1].

Peter Eiters, Jurgen Rurainsky, Philipp Fechteler , "Virtual Mirror: Real-Time Tracking Of Shoes In Augmented Reality Environments", In these paper, A single camera captures the person and outputs the mirrored images onto a large display which replaces the real mirror. [2]

P. Eisert, P. Fechteler, J. Rurainsky, "3-D Tracking of Shoes for Virtual Mirror Applications", This paper represents, system for the visualisation of customised shoes that a person can try on virtually. [3]

Kai Shi, Dajuan Fan, "An Individual Customisation System for Shoe Products Based on the Network", In this paper, The system provides not only professional guidance and advice but also realizes shoe customization online. [4]

Jasmina Stoyanova, Ricardo Gonçalve, António Coelhc, Pedro Brito, "Real-time Augmented Reality shopping platform for studying consumer cognitive experiences", This paper presents a demo platform application developed for a real-time shopping experience for shoes and attempts to define a ground base for posterior marketing research in the field. [5]

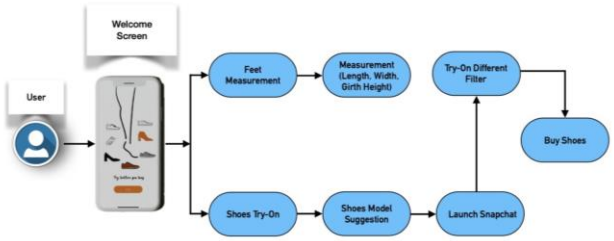
Huijing Zhan, Boxin Shi, Alex C. Kot, "Street-To-Shop Shoe Retrieval with Multiscale Viewpoint Invariant Triplet Network", In this paper user gives a real-world photo of a shoe item then, the system finds the same item in online shops, defined as Street to shop retrieval. [6]

Junya Matsuki, Yoshitsugu Manabe, Noriko Yata Kenji Nomura, Hirohito, "Shoes Recommendation System Based on Clustering of 3D Shoes Data", In This Paper, it uses machine learning and data analysis techniques to suggest shoes to users based on their preferences and characteristics. [7]

Ha-Lim Rhee, Kyu-Hye Lee, "Enhancing the Sneakers Shopping Experience through Virtual Fitting Using Augmented Reality", This paper represents the smartphone application that uses augmented reality to enhance the online shoe shopping experience. It allows users to virtually try on shoes in real-time. [8]

Shan An, Guangfu Che, Jinghao Guo, Haogang Zhu, "AR Shoe: Real-Time Augmented Reality Shoe Try-on System on Smartphones ", In this paper user experience virtual reality of sneakers using augmented reality technique for online shopping which makes more creative ways to the user for buying sneakers. [9]

III. System Architecture



We developed a Virtual Shoe Fitting System that uses augmented reality (AR) to transform the way people shop for shoes online. With the help of AR technology, customers can accurately measure their feet and virtually try on different shoe styles from the comfort on their homes. This innovative system aims to provide a seamless and interactive shoe shopping experience, ensuring customers find the perfect fit and style without physically trying on the shoes. In traditional way of online shoe shopping, we address some common challenge like sizing issue, fit comfort, material quality, for that we introduce an innovative solution that uses the power of augmented reality to measure the size of your feet and give the perfect-fitting shoes by visualizing pressure points on your feet.

IV. Results

We noticed that the user can get the virtual environment experience to improve their need of shoes fashion, but there are some free space that We noticed like to get more suggestion, on the other hand there is a idea that can we gather all the feature on a single platform like try on ,Realtime tracking, and the virtual environment, and the best customizations option for to get their own fashion shoe.

V. Conclusion

The overall conclusion is that there is an opportunity to create a single platform that combines the best features of existing shoe shopping apps. This platform would allow users to try on shoes virtually, track their shoes in real time, and customize their own shoes. This would provide users with a more immersive and personalized shoe shopping experience. There is a market for a comprehensive shoe shopping app that combines the best features of existing apps. This app would provide users with a more immersive and personalized experience, which could lead to increased sales for shoe retailers.

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