Chapter 4
Cloud-Based Intelligent Virtual Try-On Using Augmented Reality

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ABSTRACT

Advancement of technology had a significant impact on various industries, with innovative solutions like cloud computing, IoT, augmented reality (AR), and virtual reality (VR) changing the game in many ways. Here is a system known as "virtual try-ons" that leverages IoT devices like mobile cameras, cloud storage for data, and an intelligent interface for user interaction. Many people are opting for online shopping, and various challenges arise with this transition, one of which is the issue of "try-on." VR solves this challenge by introducing "virtual try-on," which replaces traditional try-on methods. It enables an individual to preview and virtually try on their desired products like clothes, watches, shoes, etc. from the comfort of their own homes, making the shopping experience easier and smoother. It also adds an element of fun and excitement to the shopping experience, increasing the hedonic value for consumers and allowing consumers to experiment and play with different products, styles, and colors in a way that is not possible with traditional shopping methods.

DOI: 10.4018/978-1-6684-8098-4.ch004

INTRODUCTION

Emerging technologies such as Cloud Computing, Augmented Reality (AR), Internet of Things (IoT), and Virtual Reality (VR) are eventually becoming a part of daily life. IoT involves the interconnection of devices like vehicles, sensors, etc. and allows for the exchange of data between these devices. Cloud Computing provides on-demand access to services such as storage, processing, and networking. Augmented Reality and Virtual Reality are used to make previously impossible things possible. This paper proposes a solution for a problem in online shopping, namely virtual try-on, which utilizes a combination of these technologies. "Virtual Try Ons" is a cloud-based web application that enables users to virtually try on products such as dresses, watches, shoes, earrings. It is based on 3D body tracking and occlusion. 3D body tracking tracks the position of body parts so that 3D objects can be accurately fitted, while occlusion removes parts of the 3D object that are covered by the body. This system was created using Snapchat's Lens Studio. The products are readily available to users in the form of snap codes that direct them to the lenses in Snapchat. Both sellers and buyers benefit from this system as it makes it easy for sellers to design and publish their product as a lens. Sellers can easily track the success of their product design using the Snapchat dashboard, which displays information such as the number of users and rank of the lens. Once published, the lenses are stored in the cloud and accessible to all users. Buyers can easily try on products using just their mobile camera, eliminating the need to visit physical stores. This technology can enhance the customer experience, leading to increased satisfaction, higher conversion rates, repeat customers, and positive word-of-mouth marketing. Moreover, virtual try-on can help to lower the costs associated with returns and exchanges, which can be a significant expense for online retailers. Virtual try-on is not just introduced into e-commerce but has also made its way into social media through the use of filters. Websites like Snapchat and Instagram have incorporated virtual try-ons as a prominent feature, allowing the general public to virtually try on fashion models' dresses and accessories, making the impossible, possible.

LITERATURE SURVEY

Antim et al. (2017) has defined Cloud Computing as providing on demand resources such as network, storage, server through internet. The paper provides an overview of Cloud Computing besides focusing on key computing issues like patch management, data location, data segregation, access to servers & applications, virtual machine security, data security, data privacy, data Integrity, data availability, security policy and compliance and network security. The author identified SLA's, data encryption, interoperability, energy management, migration of virtual machines, access controls, cloud data management & security, platform management as key research challenges in clod computing.

Abdel (2019) discussed the influence of the IoT in various industries and how it operates. According to the author, IoT is a network of physical objects with varying levels of computational power, sensing capabilities, and the ability to actuate, all of which can communicate with each other through the internet. These interconnected devices are useful in creating smart cities, improving healthcare, optimizing agriculture and water management, revolutionizing retail and logistics, enhancing daily life, and promoting a smart environment. Despite its benefits, there are still research limitations regarding privacy and security, data processing and managing, monitoring and sensing, machine-to-machine communication, and interoperability.