3D Displays and Augmented Reality in Online Shopping

By Christian Norris

Department of Computer Science and Engineering, University of California Santa Cruz

Overview

Although the online shopping space is one of the most profitable models in business, it still has tons of potential to improve. Throughout the last two decades, companies have spent billions of dollars iterating upon and refining their user experience to maximize customer satisfaction and boost sales. This however has been mostly contained to the typical format we are used to seeing from online websites. Because of this, some have started to question whether this can be improved with modern technologies.

This has lead to many people to look towards 3D Product Displays and Augmented Reality (AR) as the possible future of the online shopping experience. These technologies allow consumers to feel more involved in the process of purchasing goods online, and has been proven to be effective in increasing emotional responses and attitude towards a brand (Brito, Stoyanova, & Coelho, 2018). In an industry where creating a memorable experience to connect shoppers with a product, this is a powerful tool that has the potential to reshape ecommerce in the near future.

Efficacy of 3D Product Displays and AR

Although 3D Product Displays are still a new technology, *Nike* has become an earlier adopter by allowing users to create custom shoes using a 3D builder on their website. In a study done on users of this feature, it was shown that 3D Product Displays can show products more comprehensively to users than 2D picture displays, allowing users to obtain more information only through visuals, which improves consumers' trust and satisfaction throughout the process (Ferwerda & Lindh, 2017, p. 38). Nike has created a unique and memorable shopping experience, while simultaneously making shoppers feel more informed and in control during the process. This is a win-win overall, and is a perfect example of 3D Product Display technology in action.

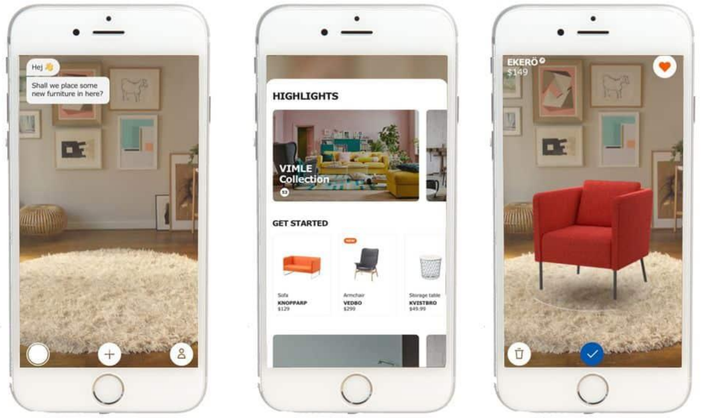
In the same vein, *IKEA* has shown that they believe in the power of Augmented Reality (AR) technology with their “IKEA Place” mobile app. Released in 2017, this app allows consumers to harness the power of AR by placing virtual pieces of furniture inside of their real homes with just their phone camera. Independent studies have shown that allowing users to interact with a product through AR leads to a higher emotional response towards the product, as well as a greater affinity towards its brand (Brito et al., 2018). This is perfect for *Ikea*, who build their shopping model off of showing consumers their products in a home environment, as well as marketing their brand as the go-to place to get all kinds of furniture. Augmented Reality has become the perfect tool to bring those values from their showrooms and into the online world.

Placing Furniture in AR!

Ikea has been a pioneer in integrating Augmented Reality into online shopping. They created the IKEA Place app in 2017, which allows consumers to place virtual furniture in their real homes using only their phone camera! This allows users to feel more connected to their purchase and ensures a higher emotional response to the shopping experience.

Are 3D Product Displays and AR Right For You?

While 3D Product Displays and Augmented Reality have been proven to bring out positive responses from consumers, not every online store would benefit from these technologies. Because of this, some thought has to go into the decision of whether or not this is right for you. While this can be a nuanced topic, there are a few questions to ask yourself to help weigh the benefits with the potential challenges that it can create. The first question to ask yourself is this: how important is user experience to the product you are selling? An online store that sells jewelry will care much more about this than one that sells office supplies. Another thing to keep in mind is the range of your store’s inventory. *IKEA Place* offers roughly two thousand items to be viewed in AR through their app, and almost all of these products are permanently being sold. On the other hand, an online clothing store can potentially sell a wider range of products, almost all of which are on a rotating stock.



Taoufiki (2022)

3D Customizable Shoes!

Nike, a company widely revered for their marketing ability, has already fully embraced 3D Product Displays in their online store. Consumers can customize the looks of their favorite shoes by selecting different colors and materials to create their perfect kicks. Because the shoes are rendered in 3D, users have can zoom in and rotate their creation, giving them even more freedom!

Technologies for 3D Product Displays

For implementing 3D Product Displays into your website, there are a few options depending on the programming language your website is built upon. For websites made using Javascript, WebGL is the undisputed king of 3D rendering in the browser. It is a popular application programming interface (API) that is both lightweight and powerful. Many libraries, such as Three.js, are built on top of it to make adding 3D functionality to your online shop very easy. If your website is built upon the programming language Python, PyOpenGL is the recommended API for creating 3D Product Displays. This API is built off of the same technologies as WebGL, meaning that it is just as lightweight and powerful as WebGL.

Technologies for Augmented Reality

When creating Augmented Reality (AR) experiences for online shopping, mobile phones are currently the most viable way to do so. Just about everyone owns a smartphone, which contains all of the necessary technology and interfaces to bring AR into the hands of consumers. If you are developing a mobile app for iOS devices, then ARKit is undoubtedly the best option. It is a development platform owned by Apple that allows programmers to build high-detail AR experiences for iOS devices. Alternatively, mobile apps created for Android devices are encouraged to use ARCore. This is a development tool run by Google, and is built specifically to bring AR technology to Android devices.

Drawbacks

Depending on the complexity of your implementation, 3D rendering can be resource intensive, especially when done in a web browser. Keeping this in mind is imperative when using these technologies in order to not turn consumers away from your website because of a slow experience. Additionally, simplicity is a key factor when designing the UI, as it might be the first time your users are interacting with these technologies. Usability can be a potential hurdle in creating an emotional response in consumers, and should be treated with importance.

References

B. Ferwerda and M. Lindh, “3D Product Display in eCommerce Websites”.

Nike, Inc. Nike by You Custom Shoes. Nike.com. Retrieved May 22, 2022, from https://www.nike.com/nike-by-you

P. Q. Brito, J. Stoyanova, and A. Coelho, “Augmented reality versus conventional interface: Is there any difference in effectiveness?,” Multimed Tools Appl, vol. 77, no. 6, pp. 7487–7516, Mar. 2018.

Taoufiki, S. (2022, February 10). Augmented reality in e-commerce: How ar boosts online shopping. MBA MCI. Retrieved Mar 22, 2022 from https://mbamci.com/augmented-reality-in-e-commerce-how-ar-boosts-online-shopping/