

E-COMMERCE WEBSITE WITH AR-BASED TECHNOLOGY

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Abstract - Augmented Reality (AR) is advantageous and reliable with efficiency in serving the customers to watch a computer-generated view of products with a touch of a finger from their smartphones at any time at their convenience. Augmented reality technology enables customers to have a real-world view of their products virtually which eventually saves the time for travelling viewing in the real shop.

In this paper, we've developed an E-Commerce website with AR grounded technology in which customers can try products nearly with the help of the AR option from home itself. We've used a media pipe frame for body discovery. The Media Pipe Holistic channel integrates separate models for disguise, face, and hand. Because of their different specializations, the input to one element isn't well-suited for the others. The disguise estimation model, for illustration, takes a lower, fixed resolution videotape frame (256x256) as input. For instance, one was to crop the hand and face regions from that image to pass to their separate models, the image resolution would be too low for accurate articulation. Thus, we designed MediaPipe Holistic as a multi-stage channel, which treats the different regions using a region applicable image resolution.

AR deals with see-through devices, usually sported on the top that covers graphics and text on the user's view of his or her surroundings. AR enhances the real world with computer-generated things that occur to appear in the same area as the real world. AR system is developed which incorporates the brain's retorts to 2D interfaces by taking visual, auditory, and kinaesthetic collaborations.

Key Words: Augmented reality, Media pipe, Holistic model, Disguise Estimation model, Body discovery.

1. INTRODUCTION

Augmented reality is an interactional encounter of an everyday world where the entities that inhabit the physical sphere are developed by simulated perceptual knowledge, sometimes across numerous sensory systems, including visual, auditory, haptic, and others. It is a flourishing development among e-commerce companies involved in business for attracting customers and understanding their needs. It is a highly graphic, interactive method of presenting relevant digital information in the context of the physical environment—generating customers, clarifying their doubts, and improving business outcomes in e-commerce sites.

There are two ways for detecting landmarks of the body using AR technology

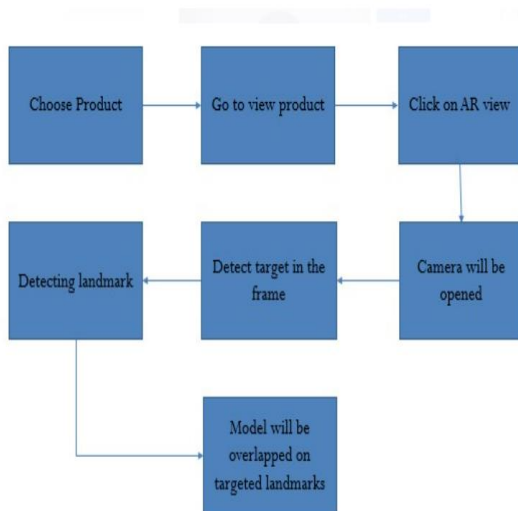
- 1) Open pose model
- 2) Holistic model

In this paper, we have used a media pipe framework in which a holistic model is taken for landmark detection instead of the open pose model because the holistic model identifies more sights as equated to the open pose model. More landmarks are revealed resulting in the increased accuracy and precision of the detection process.

2. PROPOSED APPROACH

As we all know buying a product online on basis of images available or displayed is quite ambiguous which creates confusion. As the trying option is not available on the website and we are quite unclear with our selection and not at all satisfied. To remove this dilemma, we proposed a solution to create a website with AR-based technology that helps users to try products virtually with the help of the AR option from anywhere and anytime themselves. We have used a media pipe for body detection. MediaPipe Holistic comprises a new pipeline with the enhanced pose, face and hand elements. This individually tracks in real-time, with the least memory transmission between their inference backends, with additional support for interchangeability of the three elements, depending on the quality of transactions. The MediaPipe Holistic pipeline incorporates separate models for the pose, face, and hand components, each of which is optimized for their unique domain. However, due to their different specialisms, the response to one module is not compatible with the others. MediaPipe Holistic approximates the human pose with a pose detector and consequent key point model. Then, using the assumed pose key points, it derives three regions of interest (ROI). The pipeline then produces the full-resolution input frame to these ROIs and applies task-specific face and pose models to estimate their consistent key points. Finally, all key points are unified with those of the pose model to yield the full 540+ key points.

3. ARCHITECTURE



The consumer needs to select a product from a wide range of available goods on the website which would direct him/her to the product view page. The product view page is infused with all the relevant information and pictures of the product. Under the price of the product, the consumer would get the AR view option. The customer can see a virtual picture of the product by clicking on the AR view option and enjoying the views from all angles vividly. After clicking on the AR view option, the camera frame will open, and the media pipe would search for the target in the frame. This would be followed by the detection of the landmark. The model would be overlapped on the targeted landmarks and a display of a 2D picture of the product would appear.

4. METHODOLOGY

1. Python: Python is an advanced, universal-objective programming language. Its layout attitude stresses code legibility with the use of substantial indentation. Its language structures and object-tailored approach intend to help programmers create perfect, logical code for small- and large-scale events.

2. OpenCV: OpenCV is a collection of programming functions primarily designed in real-time mainframe visual sense. Created by Intel, it was later endorsed by Willow Garage. OpenCV is a fantastic means for picture handling and presenting computer vision assignments. It is an open-source virtual storehouse that can be used to execute assignments like face identification, objection tracing, landmark identification, and much more. It maintains multiple languages including python, java C++.

3. MediaPipe: Media Pipe Instant Motion Tracking requires AR tracing across devices and platforms without commencing or adjustment. It is built upon the Media Pipe Box Tracking solution. With Instant Motion Tracking, you can simply order virtual 2D and 2D matter on fixed or

moving sides, allowing them to impeccably cooperate with the real-world atmosphere.

4. Django: Django is a complex Python web structure that facilitates the quick expansion of reliable and supportable websites. Built by qualified inventors, Django takes the attention of much of the trouble of web expansion, so you can concentrate on writing your app without reinventing the wheel. It is available, unrestricted and open-source, has a flourishing and active community, wonderful documentation, and numerous opportunities for free and paid-for support.

5. IMPLEMENTATION

Mediapipe Holistic is one of the channels that comprise optimized face, hands, and pose elements which allows for holistic tracking, thus empowering the prototype to instantaneously detect hand and body poses along with facial landmarks. One of the chief norms of MediaPipe holistic is to identify face and hands and extract key points to pass on to a computer vision model. Identify face and hands using Holistic and obtain significant points. The subsequent code fragment is a purpose to approach image input from system web camera using OpenCV framework, identify hand and facial landmarks and obtain key points. For face detection, we have used media pipe face mesh which detects 468 points on the face and it can also enable the overlay of digital content and information on top of the physical world in augmented reality. For body detection, we have used the media pipe pose model. It is lightweight due to which our frame rate increased from 5,6 fps to 24,25 fps.

6. ADVANTAGES OF AR IN E-COMMERCE WEBSITES

1. Boost customer engagement

AR is essentially collaborating, making it easy for users to get obsessed with the website. And the extended they stay on an e-commerce website, the further chance they may buy different things. Even if they don't purchase for the duration of their visit, the improved involvement means they've established a relationship with brands and products and tend to make a recollection — making them remember the website in the future. AR creates an emotional contact between buyer and product. Presentation of e-commerce goods in AR increases consumer-product connection makes the spending experience more impressive, gives users passions, and amazes them.

2. Reach new customers

To get people's interest in a blaring world, there is a need to create a buzz. Creating an appealing AR campaign can be one way to achieve it. Evolving extended reality solutions in e-commerce is a great approach to attract a new generation of customers. Generation Y and Z are tricky to surprise and Augmented reality would surely help to generate correctly that WOW effect. As they are the entities who set the

developments for the use of certain items, then to wonder them is the right way to encourage the purchase of company products.

3. Reduce returns

With AR, customers receive a lot more information about a product than with a still image or even a video. Along with presenting 2D views, what a product would offer to a consumer can be depicted. This results in matching their expectations when they receive the product.

4. Creating AR in a Web browser

By creating augmented reality offered from a web browser, there is an increase in the probability that customers would use it, which automatically increases the chances that they would connect with and buy your products.

5. Visualizations before Buying

Customers get the opportunity to visualize a product before purchasing. Customers want to experiment with the product, considering it from all sides to make sure it is value buying. Customers can perform all the required product strategies with ease anytime and anywhere through augmented reality. All they require is to download an application and select the desired product.

6. Increase Brand Awareness

AR solutions form improved brand awareness and build greater marketing. The execution of AR technologies can boost the brand, make it innovative, superior, pioneering, and noteworthy. Customers always want to return to those enterprises that have taken care of them and provided them with the most excellent feel of utilizing their services. This enhances the reliability of consumers and their preference to buy products.

7. Optimize Supply Chain

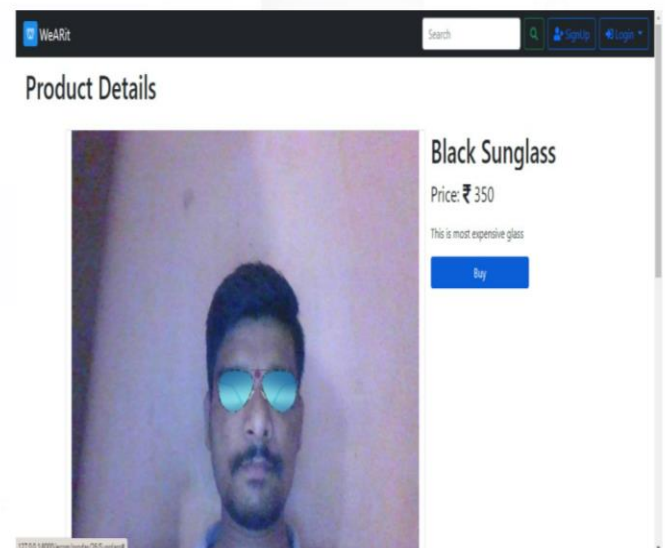
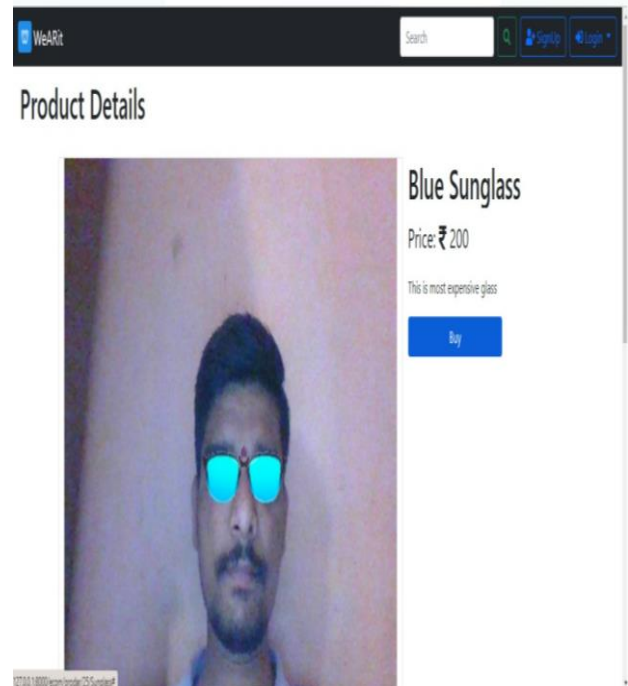
AR systems in e-commerce websites or stores contain an infinite number of products, despite their size and availability. One can save the expenditures of rent and maintenance of space, the salaries of consultants and sellers, logistics. One needs to create an e-commerce website, fill it with a wide range of products and look after the customer experience within an e-commerce website.

Augmented Reality (AR) technology generates fun, attractive, and immersive consumer experiences. The ability to accomplish AR following around devices and platforms, without commencing, stays critical to control AR applications at scale.

7. RESULT

Augmented Reality in eCommerce websites permits the consumers to get a dynamic experience of their products.

Also, it will allow the consumers to relate to the product just like they would in the real world. It provides live 2D collaborative models to help the consumers make better buying choices. For example, different products would have different images as per consumer's selection and are illustrated in the images below



8. CONCLUSION

This website has been curated to simplify the browsing experience of the consumers and make their purchasing experience memorable and pleasant. The consumers would be empowered with the tool of AR in their daily life. E-Commerce Website with AR Based Technology is a useful and effective website in assisting the consumers to try the

real world view of their products anytime from anywhere at their convenience and comfort. The augmented reality in eCommerce websites provides customers with an enticing experience, permitting them to have a real-time interface with products while remaining in their surroundings. The capacity to preview the article in AR on an e-commerce website takes away some of the ambiguity of shopping online. This ultimately makes the consumers confident that they do not have to go through the hassle of returning their merchandise. There is so much a person can do staying at home with the super potentiality of ever developing and upgrading technology. AR system solutions in e-commerce websites are an immediate way to success that establishes a comprehensive customer experience assuring special and exciting new adventures.

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