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Review on Automobile Showcase Application with Voice Control

Ayush Vyas[1], Anshuman Singh[2], Akash Tiwari[3], Pranav Shinde[4], Sagar Shinde[5], Anand Dhawale[6]

[1-6]*Department Of Computer Engineering, M.E.S College of Engineering (Wadia), Pune, Maharashtra, India*

Abstract - *Augmented Reality is a breakthrough technology that could considerably ease execution of complex operations. Augmented Reality mixes virtual and actual reality, making available to the user new tools to ensure efficiency in the transfer of knowledge for several processes and in several environments. On the other side Augmented Reality and Mixed Reality is an extremely demanding technology and, at the present day, it is still affected by serious flaws that undermine its implementations in the industrial context. Augmented Reality and Mixed Reality together can be used to make user friendly software and make it more interactive and easier for individuals. Voice Recognition allows a machine to perform the task as specified by the user. Voice recognition implies that a computer only takes dictation, recognizes spoken words and performs the different functions specified. Voice recognition with Augmented and Mixed Reality would make the interface between software and user more associate and convertible.*

Key Words: Augmented Reality (AR), Mixed Reality (MR), Voice Recognition, Virtual.

1. INTRODUCTION

The automobile sector along with most of the sectors has been declining since the global pandemic started spreading, affecting the lives of billions all over the world. Considering the ongoing situation, many businesses are now functioning through work from home but in case of selling vehicles, it is not feasible since the customer needs to properly inspect it all over. This problem can be solved by creating a virtual showroom environment which can be accessed from anywhere, this is what the automobile showcase application is all about. With the use of Augmented Reality, the automobile showcase application provides the customer/user an interactive virtual showroom experience on their mobile phones[1]. A virtual showroom environment during the pandemic will assist in the sales and promotions of vehicles thus helping the automobile sector getting into balance[2], also the 3D real-time walkthrough[3] provided along with voice control helps in improving user experience without compromising with quality and choice[4].

2. LITERATURE SURVEY

The automobile showcase application focuses on providing a virtual car showroom experience using Augmented Reality and some interactive voice commands to manipulate the augmented world. In order to make the virtual/augmented world interact with the real world, the study of a concept called Inverse Augmented Reality, that is same as Augmented Reality but is in the perspective of the virtual world rather than the real world, is necessary in order to make the virtual Augmented agent capable of interacting with the real-world Objects using different learning frameworks evolutionary computation, reinforcement learning and deep learning[1].

The use of AR technology for developing a start-up platform for marketing products can be really beneficial, the idea of using AR technology can take marketing to a whole new level. It suggests that with its use user decisions can be made easy and more efficient. It removes language barriers for the tourists or people speaking different languages and will provide the convenience to buy products depending on the visual interpretation. AR will also contribute in time and cost optimization[2].

A 3D walkthrough is a technology that allows the user to view the interiors and get a vivid interpretation along with all the details. Walkthrough idea is described in the architectural field that how 2D to 3D mapping walkthrough can be done. Aim is to navigate in the 3D scene by manipulating the two essential camera settings on the 2D map. The idea/principle for a walkthrough is on a basic saying "stand tall and see far"[3].

A research study shows that using voice interaction with the Augmented reality (AR) system, different voice commands can be used to disassemble/assemble AR car parts. The authors used different voice commands like bring, select and assemble to interact with the system[4].

Importance and future of Augmented reality in the upcoming years is very significant. It is possible to create an AR image by creating a virtual model and integrating it. They specified specific steps to create one. They also stated the hardware and software requirements for AR like display devices and tracking techniques[5].

A 'see-through system' is proposed to solve the problem of overtaking situations. The front vehicle is equipped with a stereo vision system which is utilized to generate a local 3D map of the environment. Generic and real-time AR method were also discussed in the journal[9].

There exists a system by Kia Motors who has developed a virtual showroom for their vehicles using Virtual Reality technology but the major limitation is that a VR box is needed for the walkthrough feature[11].

3. PROPOSED SYSTEM

The proposed system is a software application of virtual showroom for cars which makes use of a Development Environment named unity which is a cross-platform game engine development by Unity technologies. For the creation of Augmented Reality application, the system uses Vuforia Augmented Reality SDK. The programming language used for implementing the project is C#.

The proposed system contains the following features-

A) Model provides First Person 3D view

B) It lets the user demo cars virtually

C) It provides a complete walkthrough of the Augmented car

D) Contains voice commands to manipulate the augmented world.

The accuracy of the proposed system is expected to be 90 percent.

The following diagram represents the system architecture of the proposed system with respect to the real and augmented world. The user interacts with both real world and augmented/virtual world. The device camera captures and analyzes the real word and performs real-time tracking of the dimensions and surfaces in order to place the augmented object precisely in the scene after the tracking is done. The real world and augmented world are rendered together in a single scene which is the resultant output.

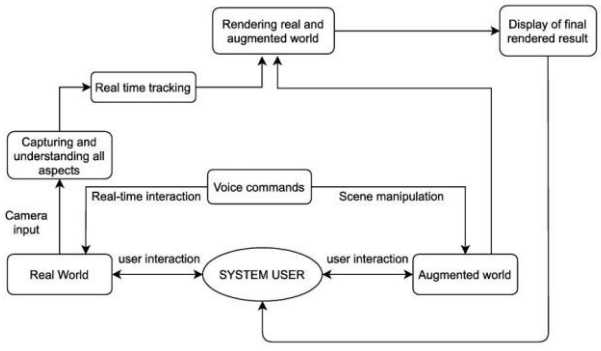

Fig-1: Proposed System Architecture

4. CONCLUSIONS

The research work integrates the use of AR technology for developing a startup platform in the context of automobile marketing. This technology can enhance Marketing by creating demand and avoid rejections by satisfying the user needs.

By improving what we see, hear, sound and smell, augmented reality would further blur the line between what's real and what's computer-generated. It has possibilities beyond our understanding and imagination. In nearly every sector, it will have major applications.

This is an application of AR that can very well allow us to live our lives more productively and informatively.

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