

# AUTOMOBILE SHOWCASE APPLICATION WITH AR & AI

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**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

Although reality can never be altered, its perception can be improved. Augmented reality (AR) is an interface between reality and the perception of reality. AR is the medium that superimposes digital information on the physical world, thereby bridging the rift between the real and virtual worlds. AR enables a novel transformational paradigm of information delivery and assimilation to a human operator, and if properly implemented, leads to cognitive load reduction.

AR can be defined as a human-computer interaction technology that interactively registers three-dimensional (3D) real and virtual objects in real time. In recent years, many automotive manufacturers have developed a keen interest in augmented reality (AR), mainly due to its accessibility and potential for generating innovative solutions.

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.

It allows users to obtain certain information they need about some aspects or procedures directly in the working environment and it has the potential to enrich a person's sensory perception. A virtual showroom environment will assist in the sales and promotions of vehicles thus helping the automobile sector getting into balance after pandemic, also the 3D real-time walkthrough provided along with voice control helps in improving user experience.

## 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. 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.

During the purchase of car, the car user looks for the reliable information as well as emotional connection with the car where the Augmented Reality is able to deliver both with building interest and excitement for the car.

Earlier customers used to educate themselves about the car by visiting the dealership store, speaking with salesman and looked at the brochure for more information but with the introduction of internet the customer gets the relevant information much easier and their expectation has changed thus leading to shop mostly online and making fewer visit to dealership where Augmented Reality is emerging as a solution to car dealer dealing with consumer behavior and expectations.

Augmented reality (AR) is a growing technology with implementation opportunities in many different markets. AR has been a successful marketing tool in retail, by providing an augmented experience for viewers either through their own smartphone, or on a large AR television display.

A research study shows that using voice interaction with the Augmented reality (AR) system, different voice commands can be used to display AR car parts. Different voice commands like open, close, change and start to interact with the system.

## 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#.

### 3.1 Vuforia Software Development Kit

Vuforia is a software development kit for mobile devices that supports augmented reality apps. The Vuforia SDK includes the Vuforia AR Extension for Unity, which is a Unity 3D add-on. Qualcomm's SDK has created Vuforia to help researchers create Augmented Reality (AR) applications for mobile phones (iOS, Android).

Vuforia SDK has been widely used in a variety of mobile applications for multiple platforms. Vuforia is an interactive system that uses the camera of a mobile phone as an input device or as an electronic visual system that detects specific patterns and markings. The screen might show a fusion of the real environment and the application's virtual reality. In a nutshell, Vuforia is a software development kit for computer vision-based augmented reality. Another type of AR application is GPS-based AR, which uses the precise location of a 3D item within the actual world.

### 3.2 Unity 3D

Unity is a cross-platform game engine developed by Unity Technologies. Unity is a gaming engine that is currently gaining popularity. Unity comes with a proprietary license, but for development, the license is divided into two: free and licensed. Unity authorized the application to be published under a free license with some feature limitations. Unity Engine, like most other game engines, can process a variety of data, including three-dimensional objects, music, textures, and so on. However, this engine is primarily focused on the creation of 3D visuals. NeoEngine, Quake Engine, C4 Engine, GameMaker, Unigine, id Tech 3 engine, id Tech 4 engine, Blender Game Engine, and many others are game engines that are similar to Unity.

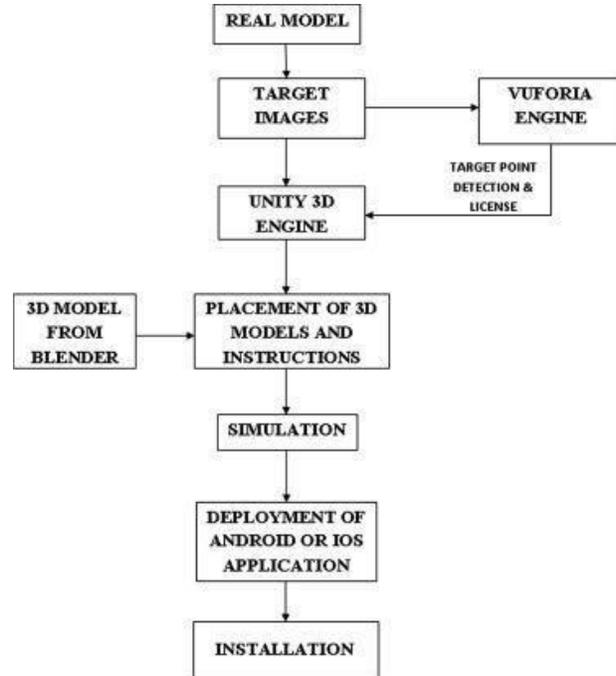
### 3.3 Android Software Development Kit

Android is a Linux-based operating system that was created primarily for touch-screen mobile devices like smartphones and tablet PCs. Android SDK is an Application Programming Interface (API) that consists of several objects in a user interface for a programming language or includes dedicated hardware to communicate with a specific system. Debugging tools and other functional utilities are included in this software, which is frequently packaged as an integrated development environment (IDE).

### 3.4 Features

The proposed system contains the following features

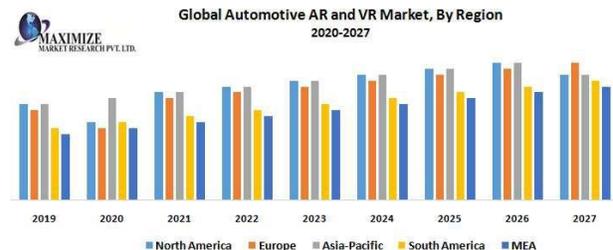
- A) Model provides First Person 3D view & let user demo cars virtually.
- B) It provides a virtual car showroom experience using Augmented Reality and some interactive voice commands to manipulate the augmented world.
- C) It projects a full-size vehicle in the real world and experience a 360° view of the car.
- D) A car promotional video on an augmented reality video screen placed on the dashboard of the car.



Proposed System Architecture

## 3. CONCLUSIONS

The research work integrates the use of AR technology for developing a platform in the context of automobile marketing. This technology can enhance Marketing by creating demand and avoid rejections by satisfying the user needs. Augmented reality is creating a new wave in the automotive industry by presenting vast number of opportunities for the manufacturer and the buyer by making it convenient for the buyers to take test drives from home and at the same time, allowing manufacturers to showcase cars without any limitations.



For automotive brands, augmented reality has become another way to lure their customers with new interactive experiences and tell the world that they keep in step with the latest technologies.

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