**CHAPTER1**

**INTRODUCTION**

The project **Augmented Reality (AR)** as a concept implies  **Reality** with a bit of  **Virtual Reality** added for extra flavor, but not so much as to overwhelm it, or put into another perspective, the emphasis should be on bringing virtual elements into the physical world rather than the other way around.

* 1. **PROBLEM DEFINITION**

The traditional way of buying a car is going to a car showroom and we choose our choice and we will be viewing the features and accessories. The work pressure of the customer is been much reduced. But in Augmented Reality we will be projecting the car through the android application. So we can see the car in 360 degree in every angle. Through the projection the customer gets full satisfaction as they are seeing the car in-front of their eyes. We can also view the car through virtual projection and can alter the car that we want to like changing the color of the car, changing the alloys of wheels and we can redesign the car in our manner. We will be connecting our project with wit.ai bot so that it understands the human natural language and it proceeds upon that command. Finally we can see our car in the way we want to alter it or view it in format of design.

**1.2 OBJECTIVE OF THE PROJECT**

The Augmented Reality is playing a vital role in the automotive industry as it is becoming immensely useful for offering great customer service. This technology is literally bringing the automotive industry to the customers on a platter. It enables the engineers to visualize and develop concepts in a more effective and different way and to provide better training to employers to enhance their performance. The work of the employees is much reduced through Augmented Reality application as it projects the virtual things through mobile application. With this AR, we can design our imagination through the way we want.

* Wide-range mobility of automobile designs
* Complete customization of cars
* Enterprisescalability

**1.3 SIGNIFICANCE OF THE PROJECT**

There is a possibility that customers visit a showroom and don’t find the car they are looking for. This can be a waste of time and very disappointing. Fortunately, this problem can be eliminated with Augmented Reality (AR). Dealers and showrooms can use AR for showing customers different variants of cars they wish to see and test drive them to their heart’s content. This can also simplify the decision-making process and help in ensuring the customer satisfaction. Across many different industries and sectors, AR has been used as a tool to better educate customers, particularly regarding technical information. The ability to overlay technical data onto real world objects (i.e. cars) to provide customers with contextual information that they can interact with, is much more compelling as an augmented reality experience than it is through more traditional channels such as online or video.

**1.4 OUTLINE OF THE PROJECT**

[AR product visualization](https://www.enginecreative.co.uk/integrated-agency-services/augmented-reality/product-visualisation/) is considered the ‘try before you buy’ for the digital age and in the case of the automotive retail industry, 3D product visualization with AR provides car dealerships with a unique way to showcase their car models. It enables customers to explore different specifications and configure different models, and then place and interact with their personally speeded up new car at home on their drive or even in the context of the car showroom. Augmented Reality Car showroom assessment system has a major outline report which is as follows:

* Exhaustive design analysis
* Accuracy
* Result to be received very quickly
* User-friendly
* To speed-up the operation of customer and industry
* Managing and maintaining of automotive showcase becomes easier

**CHAPTER 2**

**LITERATURE REVIEW**

Applications of AR in the automotive industry are numerous. Many AR techniques for the automobile industry have been studied but few actually deployed. Even if recent advances in tracking technologies, such as the constrained VSLAM, allow engineers to remove the main technological locks, some challenges will still remain. The first challenge relates to the ergonomics of the solution. For example, most of the applications require a hands-free device. While solutions are already available, such as spatial AR or semitransparent glasses, their (e.g., width of the field of view, dynamic focus distance, luminosity, and contrast) should be improved to reach a high end user acceptance. But issues are not limited to hardware. The displayed information should also be designed to facilitate the work of the end user without disturbing him or her or introducing potential dangers. For example, the iconography used to display information on a windshield must be designed to reduce the risk of hiding pedestrian or vehicles from the driver’s view. The second challenge concerns the integration of AR in the product life management process. For example, the goal is to lower the cost of content creation of an AR application and facilitate its updates; therefore, the product data management (PDM) should also integrate the needs of AR applications. Further, the development of a 3D documentation could benefit from the 3D models and animations that were created during the conception stage of the vehicle. Consequently, the development of new norms and standards concerning 3D models, animations, interactions, and documentation will probably be necessary. In summary, this chapter presented an overview of the use of AR in the automotive industry; we expect more integration of AR in the product life cycle of automobiles in the future.

**2.1 ADVANTAGES OF THE AR APPLICATION:**

* **Visualizing the car accessories**

The users can physically place car accessories using an AR application to visualize the look and feel in real life. This will increase customer satisfaction and remove all doubts. Customers hesitate in buying car accessories that don’t satisfy them visually. AR technology will allow customers to have real life experience before purchasing anything.

* **Presenting variants**

Space limitation and not enough sales executives to present the car. Like AR test drives, showroom owners will make all variants of a particular car available to customers even though it may not be available at the store. Customers can view all cars on the app. It will save time, cost and space for the showroom as they cannot fit each color and car model in the showroom due to demand and mobility in the automobile industries.