

Vespa Motorcycle Marketing by Using Augmented Reality Markerless Method Based on Android

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Abstract

The problem that occurred was CV. Scootres Group had not had a marketing application, so it was difficult to serve the buyers who wanted to buy a Vespa when they were far from the location. Sometimes the seller has to answer the questions one by one for the buyers. This study aims to create an Android-based Vespa Motorcycle Marketing application to facilitate marketing on the CV. Scoots Group. The data was obtained through Field Research, Library Research, and interviews. Then the system design stage, application creation, and testing stage. The SDK used is EasyAR, and the C programming language, and the method used in this research is the Markerless method. The results of the study indicate that the system used is BlackBox testing and User Acceptance Test (UAT) based on BlackBox testing. The system is running well, and based on UAT testing, 10 respondents with a percentage of 85% and 2 Expert Examiners with a percentage of 89%, both are included in the category strongly agree to apply.

Keywords: Augmented Reality; Vespa Motor Marketing; CV. Scootres Group; Marketing

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Introduction

Augmented reality is a technology that connects virtual objects with the real world and runs in real-time. Real-world objects are captured by the camera (Balakrishnan et al., 2021). When scanning the marker with a camera equipped with an AR sensor, the object corresponding to the marker will be displayed, because the camera can identify markers (Cheng et al., 2017). Augmented reality has the advantage of being easy and cheap to develop. Another advantage of augmented reality is that it can be widely used in a variety of vehicles. For example, applications on smartphones, products as gifts, and even applications in print media such as books, magazines, and newspapers. For these assets, augmented reality has many opportunities to continue to grow, including in the field of marketing or sales (Andryanto et al., 2022).

In the field of marketing, many problems arise in addition to the competition, including the growth of product diversity, increasing consumer tastes, and the existence of new products that companies have to face (Bresnahan & Gordon, 2008). Another problem that occurs during this time in motorcycle shops is when consumers want to buy or look at a motorcycle, but the motorcycle is not available in the store, and they cannot find out the price of the motorcycle that is not available in the store. The factors that influence purchasing decisions are price, which is a sensitive factor for consumers, because consumers always consider carefully when making purchase decisions (Macall et al., 2021).

The Indonesian automotive industry is also experiencing rapid development in line with the rapid development of technology, supported by the globalization era (Dheviests & Riyanto, 2020). One of the impacts of the development of the automotive industry is the increasing availability of motorcycles for the public in the market (Siregar, 2019). Without realizing it, this has had a bad effect on many motorcycles, and at that time, has lost its appeal in the eyes of the wider public (Hargreaves, 2022). One type of motorcycle that has been increasingly eliminated with the advent of the latest type of motorcycle is the Vespa-style motorcycle (Giacomin, 2022).

Pradana's research made a digital product advertising application at PT Piaggio Indonesia based on an augmented reality desktop, which can be used as a way to find out more details about the distribution of the latest Vespa products to make them more attractive and interactive. It can be used as a means to encourage potential consumers to get or learn more

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about Piaggio Indonesia's latest products (Pradana et al., 2015), but the disadvantage of this study is that the 3D objects in this application are still not perfect so that better and detailed 3d objects can be created later for Vespa parts and lack one more feature, namely not showing the front price of the line.

Research conducted by Pamungkas & Guridno, Researchers succeeded in making an augmented reality technology application with an Android-based Honda Genio brochure to complement Astra Motor Majenang's promotional materials, namely an augmented reality application for Android-based Honda Genio promotional materials. Machine Motor, frame, tachometer, power outlet, bicycle trunk, motorcycle, text, and voice display function ((Pamungkas & Guridno, 2019), but the shortcomings in this research log are that the 3D object model is still not good and is expected to be further developed into a more detailed 3D object as an augmented reality model to attract consumers.

Research conducted by Rahima, an automotive company that produces quality vehicles for Indonesian families and encourages the growth of the Indonesian automotive industry. We use print media such as brochures to promote our products in several showrooms such as in Mataram City. Using brochures to promote products means developers can't render products in 3D if the developer's product isn't available. The research succeeded in designing and building information providers in product brochures using augmented reality technology providers such as Wuling Automobile advertising providers. mobile device (Rahima et al., 2021), but the shortcoming of this research journal is that this study still uses the marker method, where there must be a medium for scanning to display the object.

In this study, we utilize AR technology for marketing media to improve customer experience, so that customers will get a lot of available information, and can make and complete transactions quickly. AR can be used to provide visual information about the purchased Vespa motor. Because the presentations contained in the prospectus still use regular presentations from other magazines today. Its initial point system turns a 2D image that can only be seen from one angle into a 3D image that can display the geometric details of a car using an Android smartphone. The system development model used is the waterfall with steps used to design and implement augmented reality technology, from analysis, and testing to maintenance.

Method

This stage of research includes problem identification, problem formulation, literature study, data collection, system design, testing, and system implementation. The identification of the problem resulted in the conclusion that it is necessary to identify the type of Vespa engine and identify the specifications that exist on each type of Vespa engine. It's about being able to analyze and determine what the damage is and being able to make immediate repairs. Problem identification is a very important step because it determines the next step, which is to prioritize the problem and look for problem-solving alternatives that suit the situation (Prasad et al., 2022).

Some of the problems are how to provide information about existing Vespa engines and provide information about Vespa engine prices. By using a smartphone, identification is carried out in an application so that it can be used anytime and anywhere. Problem formulation is one of the steps in certain stages of research and occupies a very important place in research activities, without formulating the problem, research efforts are futile and fruitless (Lewis, 2019).

A review of the literature helps us get theories that support later research, such as augmented reality (Jingen Liang & Elliot, 2021). Literature studies are available from books, journals, scientific articles, and articles and research conducted (Linnenluecke et al., 2020). Documentary research is a method used to collect data or sources of information related to the topics discussed in the study. The research literature is available from a variety of sources, journals, sourcebooks, the internet, and libraries. The literature review is a type of research that is carried out based on theoretical references relevant to the problem under study. This article describes the impact of daily air pollution exposure on food vendors around the terminal.

The data collection method is a very important step in research, the data collected is primary data and the focus of the research topic (Sileyew, 2019). Data is everything that can be used as input to generate facts and information (Shi et al., 2020). Information is data that is processed in a form that is important to the recipient and that has actual or perceived value in current or future decision-making (Muttaqin et al., 2022).

Observation, researchers collected data by making direct observations in the Vespa Motor market to observe the sea cucumber processing process, and how sea cucumber transactions are carried out. The interview is that the researcher conducted a question and answer session with the Vespa motorcycle marketing party regarding the description of the goods.

The literature review is that the researcher sees and reads several journals and books related to the Vespa Motor Marketer Application. In designing applications to meet these needs, several supporting software is used, including CorelDraw a

graphical processing application for creating user interfaces, EasyAR SDK as a library for databases, Blender application for creating 3D objects, and Unity as the main processing and coding software in building augmented reality applications. A flowchart is an overview of the flow in an application being designed, it illustrates several processes in an application that are created from start to finish.

a. Main Menu

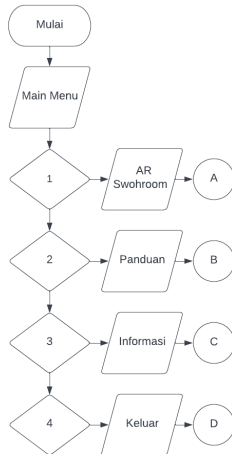


Figure 1. Flowchart (Main Menu)

b. AR Showroom

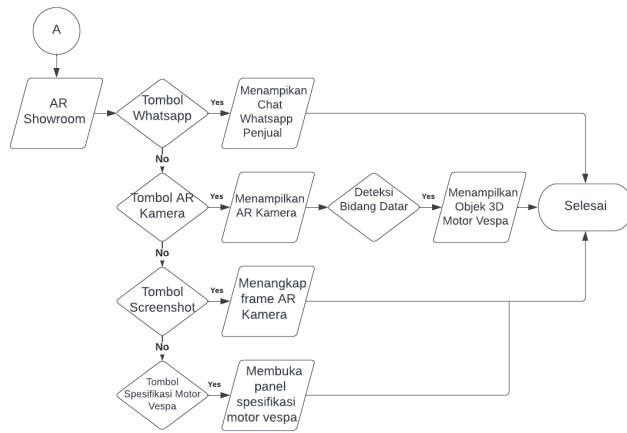


Figure 2. Flowchart (Menu AR Showroom)

b. Guide Menu



Figure 3. Flowchart (Guide Menu)

c. Information Menu



Figure 4. Flowchart (Information Menu)

e. Exit Menu

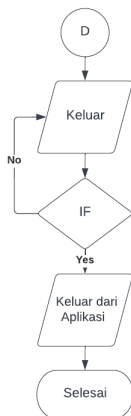


Figure 5. Flowchart (Exit Menu)

Results and Discussion

Result

The implementation process certainly has two phases that need to be implemented. So the introduction process and the launch process. The app launch process includes providing usability and functionality information for the app. After a smooth launch, the onboarding process begins, allowing users to gradually familiarize themselves with the new system and start using embedded applications. The following is the result of the implementation of the output design consisting of the Application Main Page, AR Showroom Page, AR Scan Page, Guide Page, Information Page, and Program Listing.

Application Home

On the main page of the Vespa motorcycle marketing application there are features available in the application, here are the available displays such as AR Showroom to display a selection of several Vespa motor vehicles that will be displayed, a guide menu to display procedures for using the application, an info menu to display information related to the application as shown in figure 6.



Figure 6. Application Home

Showroom AR Page

- 1) Features in the AR showroom page there are several button options, namely: (a) AR Scan button to project the camera in capturing Vespa motor objects in 3D, (b) Contact button to display seller contacts. (c) Home button to return to the main menu.



Figure 7. Showroom AR Page

- 2) Features in this contact there are several buttons to display seller contacts such as Whatsapp, Instagram, and Email. Then when we touch the WhatsApp button, the application immediately leads and opens the Whatsapp application on our android then goes to the seller's private chat as shown in figure 8.



Figure 8. Showroom AR Page

AR Scan Page

The features on the AR Scan page have results obtained after pressing the ar scan button and then pointing the camera at the surface of a flat plane such as the ground, floor, etc. with the result of bringing up a 3D object of the Vespa motor vehicle. Features on this page there are several button options, namely: (a) Features to zoom in and out of Vespa motor objects by pinching using 2 fingers on 3D objects of Vespa motors, (b) Buttons to submerge and display the appearance of 3D objects of Vespa motors, (c) Buttons to display the specs of Vespa motor vehicles. (d) And the button to return to the AR Showroom menu.



Figure 9. AR Scan Page

Guide Page

The Vespa motor marketing application guide page displays the procedures for using the application such as how to open the application, a camera setup guides with a flat plane so that it can display objects, adjusting the angle of view and size of objects so that objects will appear automatically, a user guide if you want to return to the previous page and a user guide to close the application.



Figure 10. Guide Page

Information Page

The information page of the Vespa motor marketing application, it displays information on the purpose of this application, which is to make it easier for Vespa motorcycle sellers on the CV. Scooters Group, in addition, displays the developer information of the application.



Figure 11. Information Page

System Testing

After doing the design, proceed to create the designed application; this will make the application according to the original design. However, the resulting application must first be tested to determine if it is ready to run and is working as expected. The testing phase can also be used to see the performance of the application against targets that have not been met by the application under construction, so that design and code time improvements are needed in the application.

Testing is one of the steps that must be done to create a quality application or system. Thanks to these tests, developers can uncover vulnerabilities & bugs contained in a system, as a result of which they can be fixed immediately. The goal is to adjust the function using the desired specifications. The testing system used is the black box, which tests this software, emphasizing the results of the testing process. Black box tests set up different output scenarios that are used to measure application correctness by varying the input data.

Table 1. System Testing

| Test Scenarios | Desired result | Result |
|------------------------------|---|--------|
| Click "AR Showroom" | Features several types or types of Vespa Motors | Ok |
| Click "Guide" | Display the Application Guide Menu | Ok |
| Click "Info" | Display the App Information Menu | Ok |
| Exit button | Exit the App | Ok |
| Click "AR Camera" | Opening Vespa Motor AR Camera | Ok |
| Click "Contact" | Displaying Vespa Motorcycle Seller Contacts | Ok |
| Click "Home" | Back to Main Menu | Ok |
| Vehicle Specification Button | Displaying Info about Vespa motor specifications | Ok |
| Back button | Back to Showroom AR Page | Ok |
| Start button or Stop Symbol | To display or immerse the 3D object view of a Vespa motor | Ok |
| Pinch with 2 fingers | To zoom in and out of Vespa motor objects | Ok |

Table 1 is the test result of the augmented reality-based Vespa marketing application that has been carried out, this test is carried out by BlackBox testing, namely by testing each button function contained in the system, the test results of each page such as the main menu, AR Showroom menu, camera AR menu, displaying feature functions can run according to their functions.

Discussion

The Augmented Reality-Based Vespa Motor Marketing Application can make it easier for users who are going to buy a Vespa motorcycle by looking at the list of Vespa motorcycles equipped with specifications. In addition, it has the advantage of visually displaying 3D Motor Vespa objects so that they look like real images, this can make it easier for users to see image details through the 3D objects so that they can improve customer experience (Chylinski et al., 2020). Marketing this Vespa motor using 3D objects as vehicles to be sold will certainly take a long time in making 3D objects so this is a shortcoming in the Augmented Reality-Based Vespa Motor Marketing application.

Conclusions and Suggestions

Conclusions

Based on the results of the research discussion, it can be concluded that the design of the Vespa motorcycle marketing application starts from the data collection stage by conducting observations and interviews with CV management. Scootres Group. Then the application design phase, system creation, and finally the testing phase. The implementation of the Vespa motor marketing application is carried out on the CV. Scootres Group, with the results of testing the system, shows that all features can be used.

Suggestions

This system has shortcomings, so further development suggestions are expected to use multiple users so that there are admins, vehicle owners, and customers or buyers. The application is only available on the Android operating system

and is expected to be developed on other operating systems. The availability of 3D objects that are lacking, especially with a special design that resembles a motor vehicle, can use a help application that can easily create 3D objects.

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