IMPLEMENTATION OF MARKERLESS AS AN INTRODUCTION MEDIA TO THE VARIANT OF MOBILE-BASED COVID VIRUSES

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Article Information

Abstract

The Covid-19 virus has become a global pandemic since the end of December 2019. The virus was found in the Chinese city of Wuhan under the name Sars Cov 19. The Covid-19 virus spread very quickly in the world, including in Indonesia. The variants of the Covid-19 virus include the delta, gamma, iota, etc. variants. To support the identification of the type of Covid-19 virus, an Augmented Reality application has been designed which can provide information about the type, shape, character, spread, symptoms, and other information. Augmented Reality applications that are markerless can display augmented forms of these types of covid viruses. The test results show that the application functions properly and can provide information accurately and easily understood. By using the Augmented Reality feature, information can be conveyed more interestingly.

1. Introduction

At the end of December 2019 a new type of virus was discovered called the Covid-19 virus in a city in China, namely the city of Wuhan. the covidvirus spread so quickly that On March 11, 2020 the world Health organization (WHO) has declared that the corona virus has become a pandemic. The situation that occurred during the pandemic proved that the spread of the corona virus was very fast, and Indonesia was no exception. In Indonesia, the discovery of the covidvirus was first discovered in Depok in February 2020, since then the number of patients with covid has increased. The Indonesian government quickly issued various appeals to comply with health protocols issued by the government to prevent the spread of the corona virus. the corona virus is a new virus that is very dangerous so far the covidvirus has caused 6.07 million sufferers and 157 thousand (our world data, 2022) fatalities in Indonesia, this makes it important for us to know about this virus in order to find out its characteristics, its distribution pattern and its structure so that we can prevent its spread because we already know its characteristics. A virus is a microscopic organism that cannot live without a host consisting of DNA (deoxyribonucleic acid) and RNA (ribonucleic acid) and can replicate itself and can also attack cells in the body, causing damage to cells in the body. date, 2022). In the previous study entitled "EDUCATION OF CORONA VIRUS DISEASE 19 (COVID19) THROUGH THE DISTRIBUTION OF POSTERS TO THE

SLAWI DISTRICT COMMUNITY, TEGAL DISTRICT" the solution offered to overcome this problem was only in the form of posters and media for conveying information regarding other introductions, only in the form of blog articles on the website. covid.go.id. The introduction to this method is considered less interesting and lacks detailed information about the object presented so that it can reduce public interest in recognizing this coronavirus. To overcome this problem, it is felt that an interactive introductory medium is needed and can convey information about the Covid virus in more detail and interest by combining a 3-dimensional object that can be interacted with directly by the user and a narrative explanation so that information is conveyed properly, namely with Augmented Reality technology. Augmented Reality is a technology that releases virtual objects on the live view of the user's device in the real world, and produces the illusion that these virtual objects are in the user's real space (Salam, Fadhli, 2020). AR (Augmented Reality) can provide a new experience for its users, this technology is commonly used to develop learning, game, and business applications because it can display 3D objects and is very interactive so it doesn't saturate users. Especially with the markerless method which is efficient in displaying objects without having to scan objects to get information, it makes added value in an introduction media. From the explanation in the paragraph above, it can be concluded that an interactive application is needed using Augmented Reality technology so that the delivery of the coronavirus can be conveyed properly. Based on these problems, it was designed "Implementation of Markerless Augmented Reality as an Introducing Media for the Types of Mobile-based Covid Viruses" which will really help overcome the various problems above because the covid virus is still relatively new and in general how to convey about this virus is still not interesting, it is hoped that with This research can help with this problem.

2. Research Methods

In making this research journal there are several stages in terms of system research and development, the system being used in this study is the waterfall model. The Waterfall model, commonly applied in information system or software development, is a type of System Development Life Cycle (SDLC) that follows a structured and sequential process. It involves a series of stages beginning with planning and concluding with maintenance, each of which is executed in a specific order. Every phase in the waterfall model in making this application is shown in this figure below.
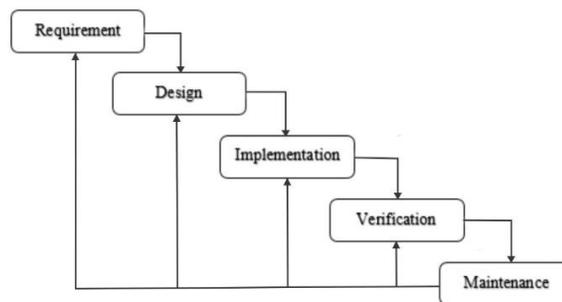

Fig 1.Waterfall Model [4].

The Waterfall approach comprises five distinct phases, including requirements gathering, design, implementation, verification, and maintenance. During the requirements stage, information is collected about the user's needs and preferences for the software to be developed. Subsequently, the design phase is employed to transform the software requirements obtained in the previous stage into a feasible design. During this design phase, a use case diagram is created to illustrate the connection between the user and the system's functions. The use case diagram of this application can be seen in this figure 2 below.
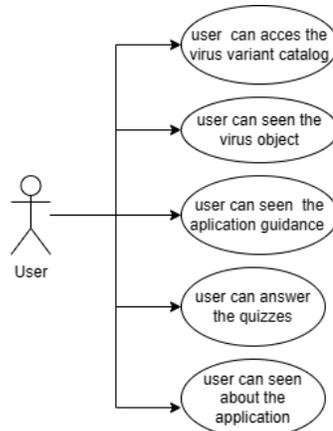
Fig 2. aplication usecase diagram

after the design stage, the next stage is the implementation and development of the software. which this application uses the markerless method. the ar camera will be directed to a flat plane to check whether the 3D object is going well or not. The next stage, namely verification at this stage, is useful for finding errors and errors during development.

The final stage in this method is maintenance. This stage is very important because at the beginning of development, there are still errors that have not been found or there are additional features into the application that can be done at this stage.

3. Result and Discussion

The outcome of this research is an augmented reality application for Android that illustrates an introduction to the Covid virus variant. The application was developed by utilizing Unity 3D, EasyAR, and Blender to produce 3D objects.

3.1 Result

This is the result of an Augmented Reality Application that was implemented on smartphones with Android operating system. It showcases the entire process of implementation, from creating 3D objects, designing the background , to coding. The system design is presented in the initial display design. These are the outcomes of the design phase development of the Augmented Reality Application, which serves as an alternative medium for introducing variant of covid viruses. you can see in Figure 3 there is a main menu of the application, where that menu will appear when the users first open the application. there are 5 menus that have been shown that consist of object catalog, quiz, about, help, and exit the display of these menus will be shown in Figure 3 below.

Fig 3. Main menu

to access the ar object users need to access the catalog first, there are plenty of buttons that consist of virus variants, and then users click one of the desired buttons that bring them into the ar camera menu. the results of this menu will be shown in figure 4 below

Fig 4.Viruses object catalog

in terms of implementations of the AR camera that is shown on the screen that has been selected by the users as the result of the experiment. the users select the variant in the catalog and the system will load the exact object that the users selected just as shown in Figure 5 below. there is also an example of the implementation of a quiz in Figure 6 below
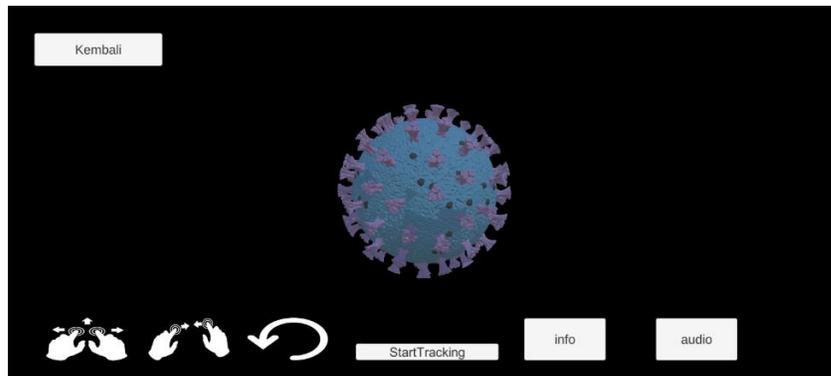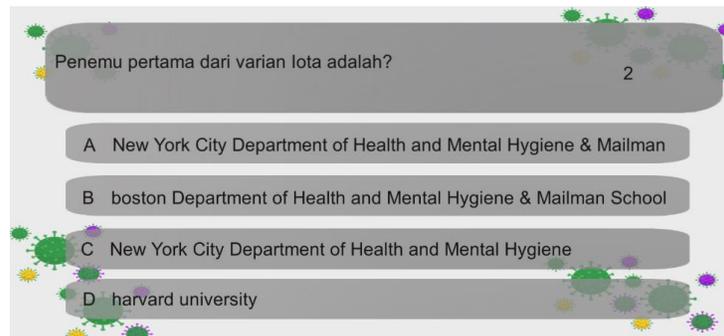

Fig 5. AR implementation

Fig 6. implementation of quiz

3.2 Result

In this study, the evaluation was conducted using a Likert scale, which is a type of measurement scale used to assess the attitudes, opinions, and perceptions of an individual or a group of people towards social phenomena. Each response option on the Likert scale is assigned a score, and the respondents are required to indicate their level of agreement or disagreement with the statement provided, by either supporting (positive) or not supporting (negative) the statement. They also need to provide a justification or explanation for their response. The Likert scale was used in this study as a variable measurement scale, with each category consisting of a

range of four answer options. Each answer option was assigned a score or weight, corresponding to a number between 1 and 4. For instance, a score of 1 represents a strong disagreement, while a score of 4 represents strong agreement. The Likert scale used in this study was composed of answer categories ranging from 1 to 4, with each response option assigned a specific score within that range. More information regarding the Likert scale used in the study is presented as follows:

1   : Very less

2   : Less

3   : Enough

4   : Good

5   : Very Good

The percentage of application eligibility is calculated by dividing the total score of observations by the number of expected scores, then multiplying the result by 100%. This calculation method is used to assess the percentage of application eligibility, which falls within the range of 0% to 100%. A detailed scale is used to interpret the percentage of application eligibility, as outlined in the table below:

Table 1. aplication of feasibility index scale

Num	Number of questions	Number of respondent	Score total	Total criterium score	Score index	Interval values	Description of intervals
1						0%-19.99%	Very Less
2						20%-39.99%	Les
3	16	24	1207	1536	78%	40%-59.99%	Enough
4						60%-79.99%	Good
5						80%-100%	Very Good

according to the test results on the application that included the user test on covid virus introduction AR application, the content and display of the applications have a good interval which has 78% intervals from the total of 24 respondents and 16 questions.

4. Conclusions

Based on the research conducted by the author by implementing Augmented Reality in making the covid virus recognition application, it can be concluded that:

1. The use of Augmented Reality technology using the Markerless method can be implemented in making the covid virus recognition application.
2. In this study the authors created an alternative means of recognizing the covid virus using Augmented Reality technology, as well as a quiz that can increase user understanding of the covid virus
3. This research succeeded in providing knowledge and insight to users about the variants of the covid virus through 3D objects and information contained in the application.

5. References

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