Education On The AR Application To Get To Know Android-Based Herbal Medicinal Plants

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Abstract: The body's reaction to a foreign object entering the respiratory system causes coughing, a mild symptom of the disease. Factors such as air pollution, unhealthy food and drink, and weather conditions are the most common causes of coughing experienced by residents of the five-park klambir village. minimal public interest and knowledge about the benefits and, People choose the right herbal medicine plant processing. Instant drugs are sold because they are considered much more effective, though. If you take instant medication frequently, you are at risk of experiencing side effects and will have a negative impact on your health if used in the long term. The development of Augmented Reality technology used on smartphones will greatly help attract the attention of the community of five gardens to recognize and supervise herbal medicinal plants to treat cough medicine.

INTRODUCTION

Herbal medicinal plants are plants that have many benefits that are believed by previous generations as an effort to cure or prevent a disease. Thirty thousand types of plants that are efficacious as medicine need to be cultivated and preserved as a descending heritage. Cough is one of the symptoms of a mild illness that usually occurs due to a reaction of the body to a foreign object that enters the respiratory system. Coughing is a reflex action of the respiratory tract that is used to clear the airways. Various factors such as weather, air pollution, unhealthy food and drinks are the causes of the most frequent cough attack experienced by village people, one of which is Klambir Lima Kebun Village. Klambir Lima Kebun Village is one of the villages located in Hamparan Perak District, Deli Serdang Regency, North Sumatra Province. According to (Luta et al., 2022) Desa klambir lima The average garden of the community has yard land.

Augmented Reality merupakan menggabungkan benda maya (2D dan 3D) ke dalam sebuah lingkungan nyata lalu memproyeksikan benda-benda maya tersebut dalam waktu

yang sama. (Nazilah & Ramdhan, 2021). Augmented Reality is combining virtual objects (2D and 3D) into a real environment and then projecting these virtual objects at the same time. (Nazilah & Ramdhan, 2021). The development of Augmented Reality technology on smartphones will make it very easy for users to recognize herbal medicinal plants. The introduction of herbal medicinal plants carried out through smartphones is one of the latest breakthroughs used in the field of interaction. The use of this technology will greatly help attract the interest of the community of Klambir Lima Kebun to recognize and manage herbal medicinal plants to overcome cough diseases before medical treatment. Herbal medicinal plants are various plants that are indeed known as plants for medicine. Medicinal Plants usually refer to herbs from plants that have medicinal properties, According to the Indonesian Ministry of Health, what is meant by traditional medicine is a finished medicine or a mixture of natural ingredients derived from plants, animals, minerals or a mixture of these ingredients that have been used traditionally for treatment based on experience. According to (Grenvilco DO, Kumontoy, Djefry D, 2023)

Augmented Reality (AR) Augmented reality is combining virtual objects (2D and 3D) into a real environment and then projecting these virtual objects at the same time. (Nazilah & Ramdhan, 2021). Augmented reality or abbreviated as AR is one of the new developments in human-computer interaction technology.

This technology will help provide information in a more interesting way for its users. The AR concept is the same as VR (Virtual Reality) which is interactive, immersion, realtime, and virtual objects will be in the form of 3D objects. (Mongilala et al., 2019).

RESEARCH METHODS

The SDLC (Software Development Life Cycle) method is the process of creating and modifying systems as well as the models and methodologies used to develop systems. The following is the SDLC method in software development. The SDLC method used is waterfall. Here are the stages of waterfall:

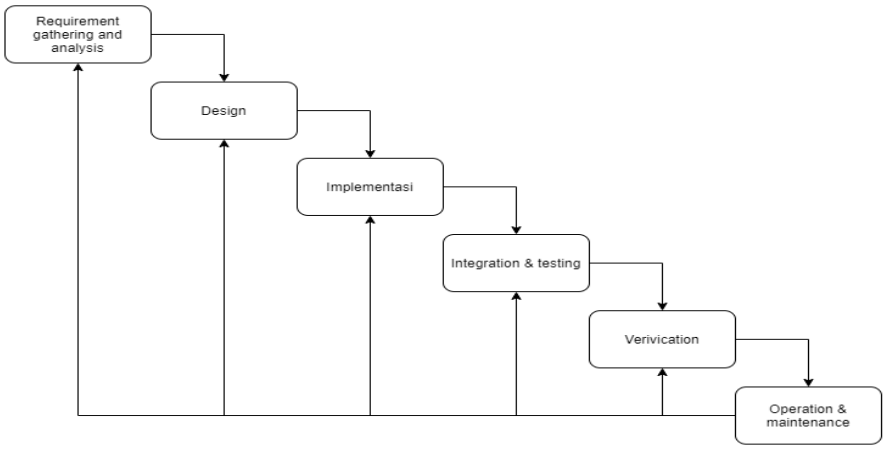

Figure 1. Waterfall Method
Source : JTIK Journal

1. **Planning**: Define the scope and purpose of the project. Identify resources, timelines, and potential risks.
2. **Requirements Analysis**: Gather and document the functional and non-functional requirements. Engage stakeholders to ensure all needs are captured.
3. **Design**: Create architectural designs and detailed specifications. Design the software architecture, user interfaces, and system interfaces.
4. **Implementation (Coding)**: Write the code according to the design documents. Developers work on different modules or components.
5. **Testing**: Conduct various tests to ensure the software meets the requirements. This includes unit testing, integration testing, system testing, and acceptance testing.
6. **Deployment**: Release the software to a production environment. This involves installation, configuration, and making the software available to users.
7. **Maintenance**: Address any issues or bugs that arise post-deployment. Implement updates and enhancements as needed.

The application to recognize the types of herbal medicinal plants in overcoming cough disease is a mobile-based application that can run on the android operating system. This application uses the marker based tracking method as a marker to display 3D objects. The marker will later use print media to help with tracking.

Figure 2 AR system of herbal medicine

In Figure 4, it is known that the general description of the system is that the user installs an augmented reality application to recognize the type of herbal medicinal plants in overcoming cough diseases in the system, then the system detects the marker. Once the marker is detected by the system, the system can display the 3D object on the screen. An analysis of an application or a running system is defined as the decomposition of a complete system into its component parts with the intention of identifying and evaluating problems and obstacles that occur in the needs that are expected to be proposed. There are many cases of lack of interest and knowledge in the community in managing herbal medicinal plants to be consumed as medicine at home and avoid side effects in the future due to the use of instant drugs that are consumed excessively in the long term. So the author wants to provide education or convey information interactively about the benefits and processing of herbal plants so that people can understand the dosage/dosage needed to make their own medicine at home correctly.

a. The system design tool used is UML (Unified Modeling Language). The UML used is as follows:

Use case

Use case diagrams can be used to determine what needs are needed from a system. The following is a proposed use case diagram design:

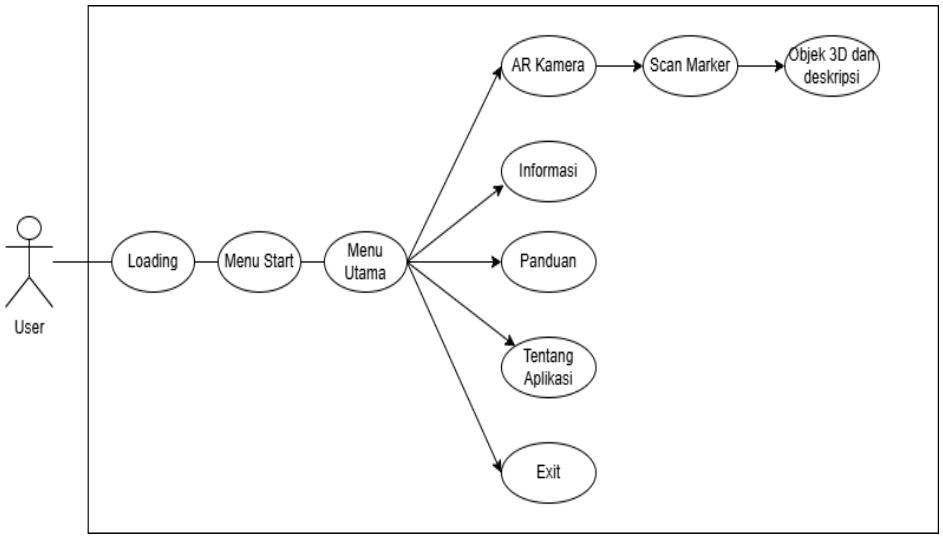

Figure 3 Use case diagram of application usage

b. Activity Diagram gives an overview of the stages of work on this application. This diagram displays the activity from both the user's and the system's point of view

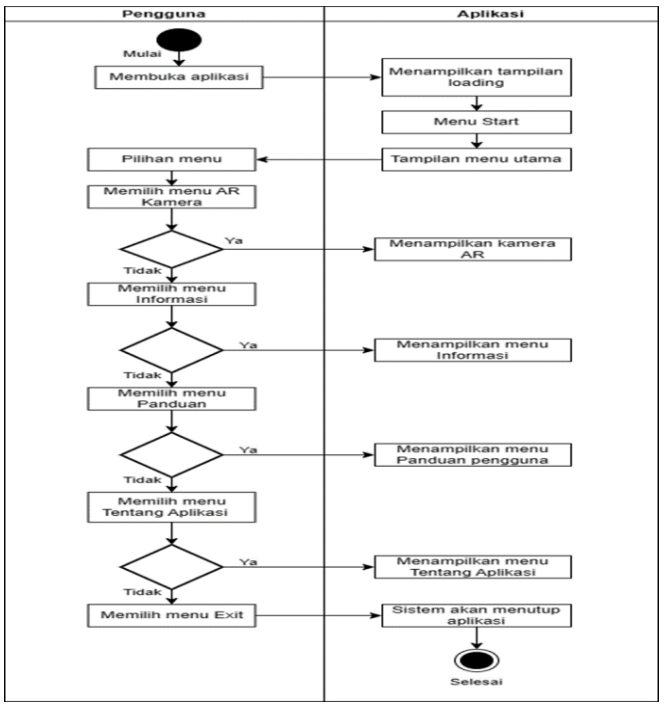

Figure 4 Activity diagram of application usage

c. Sequence Diagram aims to describe the interaction that occurs between objects in a process that occurs in a system in chronological order

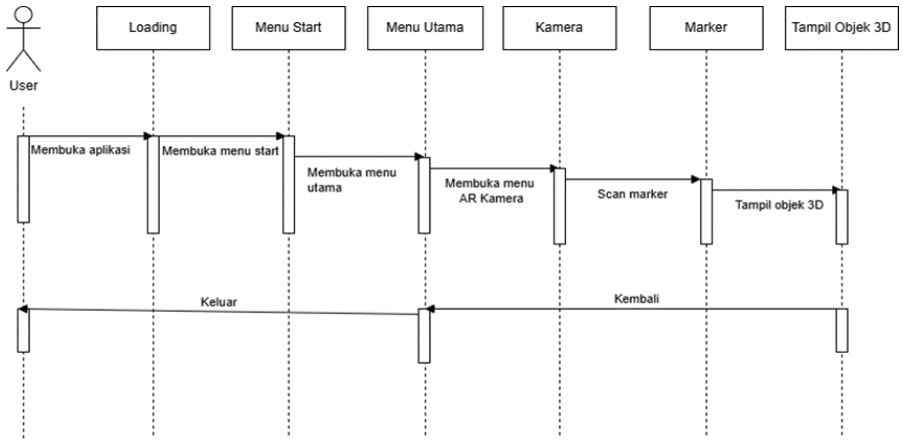

Figure 5 Sequence Diagram Displaying Objects

RESULTS AND DISCUSSION

This application is implemented directly on android smartphone devices with the Android operating system. The following is the appearance of the Augmented Reality Application to get to know herbal plants in overcoming Android-based cough diseases as follows:

Figure 6 Design of Application markers

Application Icon Display

Figure 7 Application Icon Display

Start Menu Display

The start menu is the display presented by the system to display the Welcome page and the start menu after the loading page.

Figure 8 Start Menu Display

Main Menu Display

The main menu is the display presented by the system which consists of several menu options such as AR Camera, Information, Guide, About Application and Exit. The main menu display can be seen as shown in the image below:

Figure 9 Main Menu Display

Information Menu Display

On this menu page there is additional information such as how to prevent coughing,

a list of what meanings to avoid when coughing, what are the ethics when someone has a cough and if the cough continues when to see a doctor. It can be seen as the picture below:

Figure 10 Information Menu Display

Figure 11 Information Menu Display

Figure 12 Information Menu Display

The guide menu is information in using augmented reality applications so that users know how to use the menu on the AR camera. It can be seen as the picture below:

Figure 13 Guide Menu Page Display

Camera AR Menu Display

The AR camera display is the main scene of the application that displays the augmented reality camera. In this display, the user must use a marker to see the 3D object of the herbal medicinal plant along with the description described.

a. Ginger Herbal AR Camera Display

When the User selects the ginger marker, a 3-dimensional visual of the ginger herbal medicinal plant will appear. The 3D object that appears is accompanied by a description of information about the herbal medicinal plant and its processing. See the picture below:

Figure 14 Ginger Herbal Augmented Reality Display

b. Turmeric Herbal AR Camera Display

When the User selects the turmeric marker, a 3-dimensional visual of the turmeric herbal medicinal plant will appear. The 3D object that appears is accompanied by a description of information about the herbal medicinal plant and its processing. See the picture below:

Figure 15 Turmeric Herbal Augmented Reality Display

c. Noni Herbal AR Camera Display

When the User selects the noni marker, a 3-dimensional visual of noni herbal medicine will appear. The 3D object that appears is accompanied by a description of information about the herbal medicinal plant and its processing. See the picture below:

Figure 16 Augmented Reality Display of Noni Herbs

d. AR Camera Display of Garlic Herbs

When the user selects the garlic marker, it will display a 3-dimensional visual of the garlic herbal medicinal plant. The 3D object that appears is accompanied by a description of information about the herbal medicinal plant and its processing. See the picture below:

Figure 17 Augmented Reality Display of Garlic Herbs

CONCLUSION

The Augmented Reality Application Recognizes Types of Herbal Medicinal Plants in Overcoming Cough Disease Based on Android with the overall marker based tracking method can be implemented properly according to the design that has been made. This application is built by involving 3D visuals according to the 3D objects displayed as well as the description of the herbal medicinal plant. The programming language used in this application is the Augmented Reality Application, which can educate the public about herbal medicinal plants, especially cough medicine. This application can introduce to the community of Klambir Lima Kebun about android-based AR technology

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