





AR-Nilam: Nilam Android Application Using AR

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AR-Nilam: Nilam Android Application Using AR

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A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE BACHELOR OF SOFTWARE ENGINEERING (EDUCATIONAL SOFTWARE) WITH HONOURS





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FACULTY OF COMPUTING AND META-TECHNOLOGY UNIVERSITI PENDIDIKAN SULTAN IDRIS

2023









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(DR AZNIAH BINTI ISMAIL)





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ABSTRACT

One element that is crucial for Malaysian students is nilam writing. Nilam writing requires pupils to have a basic grasp of the books they have read, thus they must develop the ability to recognise a book's key plot points. Nilam writing is used in schools, particularly in Malaysian primary schools. There are, nevertheless, a significant number of students who do not want to write nilam. The goal of this study was to create an Android application AR-Nilam, that use augmented reality (AR) technology to display information related to nilam and encourage kids to write nilam. The IN-Nilam Android application and the AR-Nilam Android application are the two primary components of the Nilam System. The Evolutionary Prototyping Model was used to design the app, which also required gathering user needs and holding a few sessions with experts to assess the suitability of the app's features. The results of the analysis of the elicited needs were utilised to create a Value Proposition (VP) Canvas. A device with the VP Canvas was delivered to the experts. The experts must decide whether to include the features in the software as part of the solution for each of the four pains, five pain relievers, and three gain creators listed on the VP canvas. The app is then created in Android Studio utilising Java, Unity, and a MySQL database. The Android software IN-Nilam focuses on nilam authoring, including how to add and manage nilam. The goal of the Android app AR-Nilam is to encourage students in primary schools to complete a quiz and write nilam by using augmented reality to display information that are related. In order to display sufficient linked information to be filled out in the nilam form, the nilam system requires two independent Android applications to work together.

Keyword: Augmented reality, Education, 3-Dimensional, Interactive Learning









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LIST OF ABBREVIATIONS

AR-Nilam	-	Nilam android application using AR.
ICT SDD	-	Information and Communication Technology Software Design Documentation
SRD	-	Software Requirement Documentation
AR	-	Augmented Reality
VR	-	Virtual Reality
UI	-	User Interface
SDK	-	Software Development Kit
SDLC	-	Software Development Life Cycle







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CHAPTER 1

INTRODUCTION



This chapter discussed the introduction of research. It provides the overview, research background, problem statement, research objectives, research questions, research scope, research interest and operational definition of AR-Nilam.

AR-Nilam is a mobile application with the implementation of augmented reality. It works like a nilam book to tracks the books that are already been read by the primary school student. The common problem face by the primary school students is when they lost the nilam book and it is required to handwrite the synopsis of the books. R-enabled eLearning applications render the augmented object on the screen and play 3D examples of concepts that allow students to learn and engage. Altogether, computer



graphics are also being used extensively, which enable an object to be captured and show up in the augmented environment and render searches about the object.

Six chapters make up this thesis. The overview of the research, the background of the research, the issue statement, the research goals, the research questions, the research scope, the research interest, and the operational definition of AR-Nilam Application are covered in the first chapter of this thesis. The second part discusses a review of previous research using augmented reality. The intended methodology and the breakdown work to create this model are discussed in the third chapter.

The design and creation of this mobile application are covered in the fourth C) 05-4506 chapter. The data collection is covered in the fifth part. A questionnaire will be used as the data gathering method. The conclusion portion is covered in the sixth and final chapter. This part includes the research's conclusion as well as its limitations, recommendations for further study, and future work.

1.2 **Research Background**

Augmented Reality works when virtual objects is applying in real physical world. Unlike immersive Virtual Reality which creates a totally immerse environment, virtual imagery in AR interfaces attached to real locations and objects and allow users to see like the real object. This technology can enlarge the education sector worldwide, as it









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has the potential to enable new forms of learning and transform the learning experience by motivating students with their study.

Due to the spread of this disease and the closure of physical classes, online learning through the uses of several devices like computers, laptops, tablets and mobile phones with internet access in synchronous and asynchronous environments become the alternative learning methods. Through these learning methods and environments, students have a freedom in learning and get connected with their teachers anywhere they want (Singh and Thurman, 2019).

1.3 **Problem Statement**

Nilam is a book that is use in primary and secondary school student in Malaysia to record books that they have been read. They need to hand write the synopsis and some other required information about books that they read. This is a how Malaysian education ministry ways to attract student to reads books.

There are few problems that always happen related to the Nilam book and one common problem is the book gone missing. Change the nilam physical book into a digitalise application is one of the ways has been said by (Islam & Mazumder, 2010) many manual systems have switched to mobile application. Technology such as AR is a good implementation to the application because it can be an attraction point for the student to use it more frequently.

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AR technology that can visualize a pop-up 3D animation (Poonsori, 2011; Dong & Si, 2018) is seen as having the potential to be interesting additional feature for the project. Hopefully AR can help the student to fill in the nilam form with the information displayed in 3D. Nilam system also get the current changes with the existence of IQ-nilam (MOE, 2021) and m-Nilam (APKPure, 2022).

IQ-nilam is a web-based application that is similar to nilam book but has been digitalised. It is currently used by some schools in Malaysia and required MOE email for student to use it.

USM through Pusat Pengetahuan, Teknologi Maklumat dan Komunikasi is currently organising a local community project that requires e-Nilam mobile application (Jamil Kassim, personal communication, March 25, 2022). The benefits from the local community project the school can have their own system with the data that they can provide to develop the mobile application.

An application with an integrated use of AR can be a major change in education. AR can attract student to use the application and can be a turning point for them to start doing their nilam in a much simpler way. Application that can be used anywhere and anytime.

1.4 Research Objectives







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This project is developed based on the following objectives:

- i. To identify the features to be developed in this AR-Nilam Mobile Application.
- ii. To develop a prototype for AR-Nilam Mobile Application with an augmented Reality Features based on the discovered features.
- iii. To evaluate the functionalities of the prototype of AR-Nilam Mobile Application with an Augmented Reality Features.

1.5 **Research Questions**

There are several research questions of this research that are identified:

- i. What is the best layout for the application's features to draw pupils in Nilam?
- ii. How to create an AR application that allows for user-app interaction?

05-4506832 pustaka.upsi.edu.my How to evaluate an application that students can use for usefulness and usability? iii.

1.6 **Research Scope**

The scope of users is Primary School student that are needed to do their nilam. The scope of content includes Nilam, quiz, nilam related information and how AR technology was incorporated into this application. The platforms used in the construction of AR-Nilam are Vuforia, Visual Studio, Android Studio, Blender and Unity.





1.7 Conclusion

In conclusion, this chapter will be an introduction for the AR-Nilam mobile application. The focus of this research is to develop a mobile based application that integrates the use of augmented reality for nilam purpose. This application is developed to attract the interest of the primary school student and for them to keep track of the books that they have read through the mobile application also for them to be able to realize the important nilam info visualized by augmented reality in form of an animated pop-up 3D animation.





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