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Description of How the Prophet Muhammad SAW Dressed in Metaverse using Virtual Reality (VR) and Augmented Reality (AR) Technology

Miswan Surip*, Mohamad Zulluqman Afiq Rahmat, Muhamad 'Irfan 'Adlie Zainudin, Said Amirul Hasloni

Department of Information Technology, Centre for Diploma Studies, Universiti Tun Hussein Onn Malaysia, Pagoh Higher Education Hub, 84600 Pagoh, Johor, MALAYSIA

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Abstract: The main reason this project is to show the Muslims the actual way to wear clothing based on the action of prophet Muhammad SAW because of the lack of exposure can be seen throughout the decades where people in the mosque frequently asked questions regarding manner in dressing according to Islamic Law. The project is intended to develop a visual guidance on how Prophet Muhammad SAW wear his clothing through Metaverse using Virtual Reality and Augmented Reality as an application for android operating system platform, for Muslims in the range of 4 years old and above as they start to understand and learn. The content is based on hadith by Prophet Muhammad S.A.W about proper wears in Islam and for the character's model and environment's model are created using Blender, edited using Adobe After Effect, encoded by using Adobe Media Encoder, compiling into final output using Unity software into application and the procedures are based on ADDIE methodology. There are many Muslims that practice the wearing of trendy fashion clothes that do not follow the way of our Prophet. This statement is true since we can see male and female, especially teenagers and youth wearing fashionable clothing that does not follow the Islamic law, especially photos that are posted in social media. It helps them to enhance and improve their knowledge about the visual of how Prophet Muhammad SAW wears clothing.

Keywords: Metaverse, Islamic Dressing Etiquette, AR and VR

1. Introduction

Metaverse is known as the post-reality macrocosm, a perpetual and patient unix based terrain incorporating physical reality through digital perspective. It is grounded on the confluence of technologies that allow for interactions with virtual environment on a multimodal level, digital objects and people similar to virtual reality (VR) and stoked reality (AR). Hence, the Metaverse is a connected web of social, networked immersive surroundings in patient multiuser platforms [1]. It enables flawless

*Corresponding author: miswan@uthm.edu.my

integrated Stoner communication in a dynamic relations and real-time with digitalize vestiges. Its first replication was a web of virtual worlds where incorporations were suitable to teleport among them. The contemporary replication of the Metaverse features social, immersive VR platforms compatible with massive multiplayer online videotape games, open game worlds and AR cooperative spaces [2].

1.1 Introduction to Phases in Virtual World Development

In the original phase pre-development there are four process which is internal research, looking for developer, concepting, project plan and design document to understand the propose of making project. The second phase is development where the visual elements for the application will be created that include the environment, object and interface in detailed form as possible. The third phase for development, there is a particularly vibrant one that is advances in power calculating and underpinning sequence in a few major areas, including the prologue of stoner-created content, 3D model, open-concluded socialization, and fused audio. The fourth phase of development passed during the postmillennial decade [3]. This period was characterized by dramatic expansion in the stoner base of marketable virtual worlds (similar as Alternate Life), improve in-world content development tools, increased participation of major physical world institutions (e.g., pots, sodalities and universities, and non-profit associations), the creation of a cutting-edge virtual frugalness, and gradational advancements in visual dedication [4].

1.2 Current Status and Future Possibilities

Currently, the status of the visual art absorption has until lately cut veritably nearly to the most recent in real-time computer technology. Real-time visual perception has a specific definition that is filled of nuances with outside factors, similar as attention, obsession, and nonvisual cues. Therefore, aside than gaming, 3D modelling tool, and to some extent 3D cinematic liveliness (good as similar because the real-time constraint is lifted for the final product), virtual worlds have progressed from bland polygons to flawless layering and texture mapping, and finally to programmable algorithms, in addition to the visual detail, which can apply metamorphoses and other calculations to graphical rudiments with great effectiveness and inflexibility [5]. In term of 3D viewing, binaural audio should have clean insulation of both left-side and right-side signals to enables perceived duly, and use the headphones to serve as the audial analog for 3D spectacles. The opposite of 3D viewing, each individual affect the perceived sound field in a different way that is also similar to perfect binaural listening that cannot really be achieved without recording conditions (or conflation parameters) directly model the listener's deconstruction and terrain.

2. Methodology

Methodology is an important phase in a task because it acts as an initial overview to identify the desired goals to achieve the objectives of a thing developed, a good task needs to go through several phases in its development. Therefore, methodology is a method and technique of designing, collecting, and analysing data to support a task.

2.1 Requirements Analysis

In analysis part of the methodology, our group chooses ADDIE model for instructional design as guide of methodology writing. In addition, we search up regarding problem statements and objectives of the project. Through full project analysis the main objective of the project can be carried out without any problem. The material needed are mostly using free software for creating 3D model and developing 3D animation.

2.2 Design

For our project design phase, we started by searching up content for creating a storyboard as the main storyline. The content that we were looking for are from Hadith that were spoken or written since

the start of Islam history. Such word is based on Prophet Muhammad S.A.W. as an interpretation to his people as a guide in understanding Islamic law. The content is from "Panduan Sholat Fardhu & Sunnah" that is available in Google Play Store. **Figure 1** below shows the interface of the app and the Hadith that state about Islamic wear. The chosen content are the hadith that state in Islam, for men and women they should wear a clean piece of clothes with no visible stain, dirt, and the hadith that state Islam does not allow to wear gold ring especially for men.

Figure 1: ***Panduan Sholat Fardu & Sunnah***

2.3 Development

In the development phase, we started by making a 3D model of the surrounding environment of the mosque. The concept when creating 3D models is to keep it simple and able to deliver the objectives. Next to deliver the hadith, we used character model by creating two character model in Blender. The time required to finish up 3D character modelling is very long especially during rendering the model.

After finished the prototype model of our final product 3D animation in VR motion, it can be view and tested by equipping the VR box so user can see and feels the virtual world through visual perspective. The animation is then converted into a MP4 video by using Adobe After Effect and encoded by using Adobe Media Encoder. Then, video editing is done by using Adobe Premiere Pro. Furthermore, an application called Spatial Media Metadata Injector is used to convert the video into Virtual Reality (VR360).

Moreover, our application and Augmented Reality feature (AR) is built by using Unity. The User Interface (UI) of the application is made simple to ensure user's efficiency and helps user to understand on how to use the application more easily. The AR feature requires researches over the Internet to ensure the feature functionality. The AR Feature is achievable to develop by using Vuforia Engine plug-in.

2.4 Implementation

The menu page shows in the **Figure 2** include of five buttons; the first button "Start VR" will direct user to a YouTube video which is our 3D animation product in 360 degrees view for Virtual experience. Next the "Start AR" button that allow user to scan the QR code by select the "QR(AR)" button that will generate the QR code to view the 3D animation in Augmented Reality. Third is the "Instruction" button that will guide first-time user on how to use the application. Lastly, is the "Quit" button to exit and close the current running application.

Figure 2: Main Menu & Instruction Manual

The completion of our app can be seen by using YouTube on mobile phone, user can choose the setting "Watch in VR" and use VR headset to fell the full experience of VR world. The reason we use YouTube platform to upload the video is because it is available for everyone with smartphones nowadays. User do not have to download any specific app just to watch the animation in VR mode.

After we send out our application for testing by end-user, we send out survey with 8 questions created using Google Forms to evaluate and knows user experience and opinion about the application. The first question regarding the user's age such as user in the age of 4 to 16 years old with the help of adults or their parents to fill the survey, 17 to 25 years old and above can be fill by the individuals. Next, we ask about their knowledge before using the application to knows their current level of understanding, then after using the application are either they able to visualize themselves from using the application or not, if yes out of 10 how much is the effectiveness in learning through VR and AR platform. We also asked user opinion of our 3D model design and voice-over quality. Finally, they can state or suggest what improvement can be implemented for future project.

2.5 Evaluation

From the sample output of our final product, there are many more aspects that need to be fixed such as the pixelation of the 3D model is not proper which causes it to lose a certain part of the whole model. We were unable to upload the application as proper app that can be accessed on both operating system which is Google Play on android and Apple App Store on IOS device. Other than that, to be able to use and fully experience the 3D animation in VR mode end-user must have their own VR headset. We set the application to be available for Android user because currently there are more user that use Android than IOS device since the Android are less pricy than IOS [6].

3. Results and Discussion

3.1 Results

From our analysis through survey questions, we able to collects many feedbacks from our end-user regarding our project. We prepare survey questions to understand their current knowledge about how to wear proper clothing as Prophet Muhammad in Islamic law. Thus these questions were given to gains the feedback of our user. End-user can only use android smartphone to download and access our application to get full experiences from it. For the younger user of the age 4 years old to 13, they can try the application under parents supervision and help to answers all the survey question because most children in that range of age usually do not have access to smartphone since they are too young and endangered as they cannot limit the usage of using smartphones that could cause negative influence such as inappropriate video and language.

3.2 Discussions

From the online survey feedback, 30 user have use and answers all of the question. For offline survey, we have given a few UTHM lecturer to test and evaluate our project which is our group

supervisor Professor Madya Miswan and Mr Mokhtar. We found out most of our user are in the age of 17 to 24 years old and above 25. Mostly, before using our application their knowledge about proper Islamic attire based on Prophet Muhammad are on medium scale. Next 90% of our user able to visualize on how Prophet Muhammad wears his clothes match with the Hadith through Metaverse. Our objective is to categorize as successful as our end-user ability to visualize through VR and AR, which is effective in e-learning

Figure 3 shows the effectiveness of our application of using the Virtual and Augmented Reality Technology in learning the guidance of how the Prophet Muhammad dressed through Metaverse by end-user.

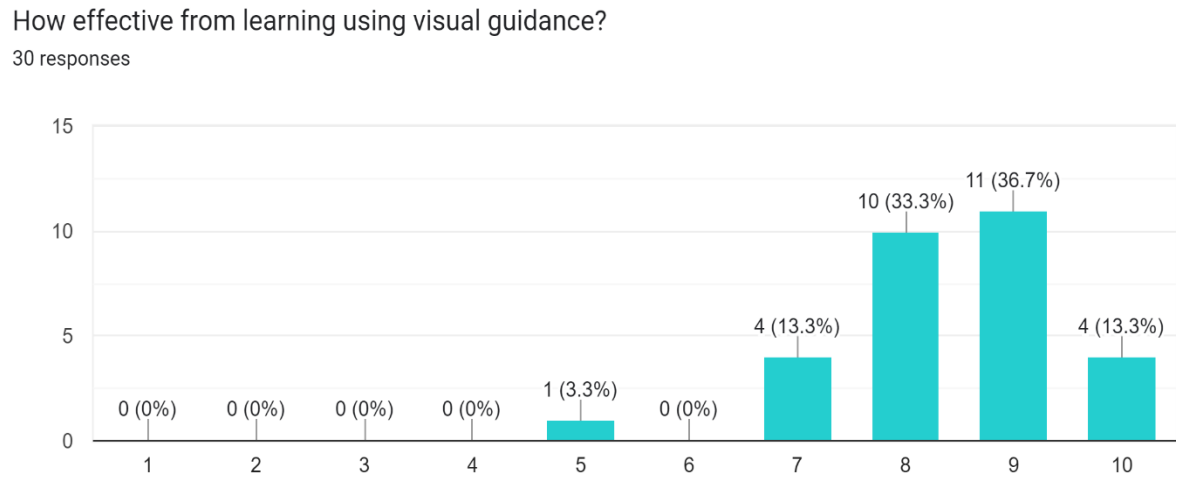

Figure 3: End-User Outcome about the Effectiveness of Using Virtual Guide

4. Conclusion

In conclusion, our project about the "Description of how the Prophet Muhammad SAW dressed in Metaverse using Virtual Reality (VR) and Augmented Reality (AR) Technology" able to reach the goal of our objectives. There are many improvements that can be implemented from our first prototype. Throughout this project, we are able to take one more step to the future of Metaverses in VR and AR technology. The knowledge of Islamic wear can be spread more using technology advancement that is more specific and true based on Hadith. The future generations can be prepared with virtual online learning. Muslim children from 4 year's old can learn the proper and actual way to wears clothes that is acceptable in Islam step by step with point of view using Virtual Reality that give realistic experience in 3D world and digitalize 3D output by using Augmented Reality application platform that is available in app store for all operating systems devices.

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