

**THE PRECEPTION OF AN INNOVATE AUGMENTED
REALITY (AR) CHINESE INSTRUMENT AMONG
UNDERGRADUATE STUDENTS**

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C16A0043

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A research report submitted in fulfilment of the requirements for the degree of

Bachelor of Creative Technology (Honours)


Faculty of Creative Technology and Heritage

UNIVERSITI MALAYSIA KELANTAN,

2021

CERTIFICATION

I am acknowledge that this work is my own work, except for excerpts and summaries with each of which I have clarified the source.




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APPRECIATION

I would like to say something to everyone that helped me completed this thesis. Firstly, I would like to thanks my supervisor TS.DR. ANUAR BIN MOHD YUSOF for guiding me throughout the report and help giving suggestion on how the format works and even can uses for further master if needed. Next I would like to give my thanks to my industrial supervisor ONG WEI SHEEN for giving me tips and tricks regarding on thesis report making and helping me in many other ways when needed. I also would like to thank SITI NURUL DIANA BINTI SUKRI my academic advisor for willingly stick with me until the end even though I have many weakness and accept me as a students. Then I would appreciate for Fakulti Teknologi Kreatif Dan Warisan (FTKW) for not giving up on me and helped me when in needs until the end. Lastly I would be most thankful will be my Parents, Friends and others who supported me when needed.

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SHORTFORM LIST

NO.REFERENCE		PAGE
FTKW	FAKULTI TEKNOLOGI KREATIF AND WARISAN	ii
AR	AUGMENTED REALITY	vii
ETC	ET CETERA	vii
SDK	SOFTWARE DEVELOPMENT KIT	vii
3D	3 DEMENSION	vii
2D	2 DEMENSION	vii
GPS	GLOBAL POSITIONING SYSTEM	6
IOS	INTERNET OPERATING SYSTEM	8
API	APPLICATION PROGRAMMING INTERFACES	12
QR	QUICK RESPOND	15
AI	ARTIFICIAL INTELLIGENT	16
UV	ULTRA VIOLET	21

THE PRECEPTION OF AN INNOVATE AUGMENTED REALITY (AR) CHINESE INSTRUMENT AMONG UNDERGRADUATE STUDENTS

ABSTRACT

This thesis presents an approach for using Augmented Reality (AR) as platform to preserve the heritage and culture as technology is advancing rapidly. This project will be focus on traditional Chinese instrument and the ways on applying AR as the new steps. But first the problem that all commonly known as why heritage is declining nowadays will be the usage of social media (Facebook, Tik Tok, Instagram, etc.) and Games (PUBG, Valorant, Mobile Legend, etc.) regardless PC or Smartphone has kept them from exploring the history and adventuring to the past and present. That the reason an application is form by using software call Unity Engine and Vuforia SDK plug-in as platform in making AR which have the capability of using camera lens to capture the product 3D or 2D even media included in real time. Then an online survey will be conducted to get to know the responded respond regarding the existing of AR and traditional Chinese instrument.

PENYEDIAAN SEBUAH INSTRUMEN CINA ANGGARAN REALITI (AR)**INOVASI DENGAN PELAJAR SARJANA****ABSTRAK**

Di dalam tesis ini, akan menunjukkan sejarah and penggunaan Augmented Reality (AR) untuk memperkenalkan alat music traditional cina dan pandangan mereka dalam AR ini. Objectif ini adalah untuk mengenalpasti ciri-ciri alat music cina dan pandangan mereka dalam AR sebagai pelantar lain. Disebabkan teknologi sekarang lebih moden seperti media sosial, permainan telefon bimbit dan lain-lain kebanyakan warisan serta budaya telah mula dilupakan oleh orang ramai. Oleh itu, dengan penggunaan AR sebagai langkah baru untuk memberi harapan untuk mengekalkan warisannya. Kerana AR adalah teknologi yang menggunakan kaca kamera telefon pintar untuk mengimbas pelantar yang disediakan untuk menunjukkan produk secara 3D atau 2D serta medianya. Aplikasi AR akan dihasilkan dengan menggunakan software Unity Engine sebagai pelantar dan Vuforia SDK pasangan (plug-in) semasa prosesnya. Lepas tu, tinjauan dalam atas talian akan dilaksanakan untuk mengenali pendapat and pengetahuan responden terhadap kewujudan AR and alat muzik tradisi Cina. Tujuan tinjauan dibuat atas talian adalah sebab pandemik yang berlaku sepanjang projek ini dilakukan.

1. Introduction

Are you interested in Chinese Instrument? Chinese instrument can be tracked back from where Chinese music started which is from Zhou Dynasty (1122BC-256BC) to Qing Dynasty (1644 to 1912) (Wiki 2021) [1].

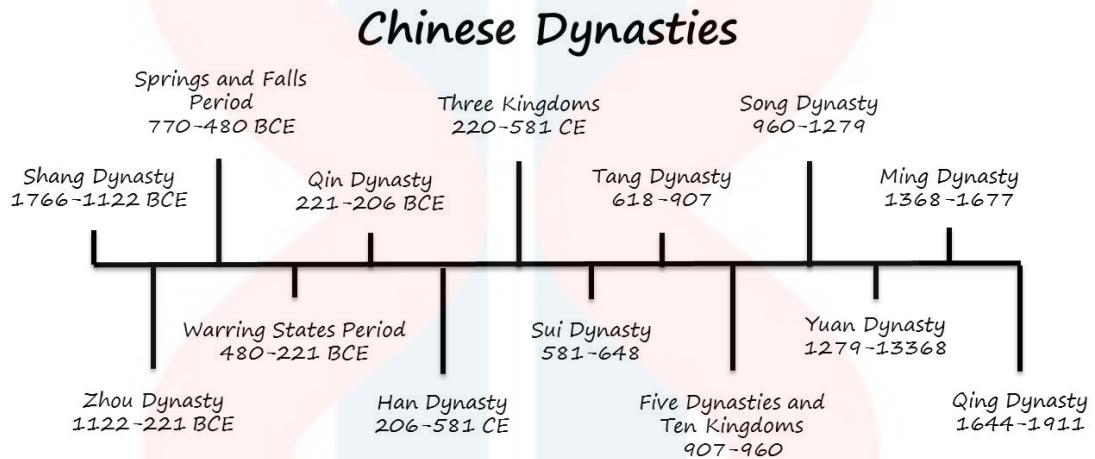


Figure 1. Chinese Dynasties Timeline.

The Dynasty period is consist of Zhou Dynasty-Qin to Han Dynasty-Sui to Tang Dynasty-Song to Yuan Dynasty-Ming Dynasty-Qing Dynasty shown in figure 1 (Wiki 2020) [2].



Figure 2. Yayue Music

In Zhou Dynasty, the system of formal music Yayue (elegant music) established where it was originally a form of classical music and dance performed at the royal court and temple in ancient China. It was created by the Duke of Zhou under commission from King Wu of Zhou (Faye 2002) [3]. In Qin to Han Dynasty, the establishment of Music Bureau (Imperial Music Bureau) was formed. Served in the capacity of an organ of various incarnations, the Music Bureau was charge directly by the emperor which may have been influence during the reign of Han Dynasty Emperor Wu who was interested in such activities and engaged himself. In Sui to Tang Dynasty, The Royal Academy was founded by Emperor Gaozu of Tang in the purpose to teach music, theatre and dance for court entertainment. Next is Pear Garden/The Liyuan was first known royal performing arts and musical academy in China. Founded by Emperor XuanZhong (712-755). In Song to Yuan Dynasty, The revival of yayue due to the revival of Neo-Confucianism which shorted to “Lixue”. Increase popularity of Chinese opera such as Nanxi opera which developed from ancient traditional of mime, singing and dancing during the Song Dynasty in the 12th century and Zaju theatre was a form of Chinese opera where poetry, dance, singing and meme with a little comedy(Travel 2019)[4]. It has been associated with the time of the Yuan Dynasty (1271-1368).

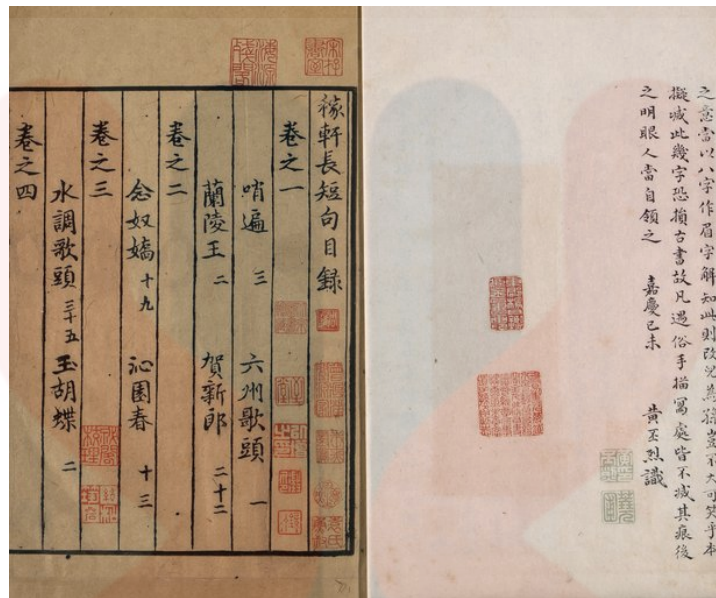


Figure 3. Ci Poetry

The art form of Ci poetry which is meant to be sung reached its zenith in the Song Dynasty. Ci is a type of lyric poetry in the Traditional of Classical Chinese poetry shown in figure 3.



Figure 4. Kunqu Opera

In Ming Dynasty, Kunqu opera is one of the oldest extant forms of Chinese opera. In Qing Dynasty, Peking opera or Beijing Opera is the most dominant form of Chinese opera that combine music, vocal, mime, dance and acrobatic which on rise mid-Qing Dynasty (1636-1912) (Wiki ,2021) [1,3]. Through succeeding dynasties over thousands of years, Chinese musicians developed a large assortment of different instruments and playing styles.



Figure 5. Chinese Instrument

A various variety of these instruments, such as Guzheng and Dizi are indigenous, although many popular traditional musical instruments were introduced from Central Asia, such as the Erhu and Pipa (Jone. Andrew 2001) [5, 1].

Musical Instruments were traditionally classified into eight categories known as bayin (Eight tone). This was used to identify the type of instruments played in imperial orchestras. There was two method to classify the Chinese instruments nowadays which is traditional and modern. Traditional Chinese instrument can be recognise according to the material used in their construction that is silk, bamboo, wood, stone, metal, clay, gourd

and hide. The modern Chinese instrument classification are now divided into four basic categories based on the method on how they played. They are bowed strings, plucked strings, winds, percussions (Sari, 2019) [6]. Nowadays in Malaysia Chinese instrument has been encourage throughout the years in order to get known to people without losing their culture. With the advancement of civilization technology has been developing rapidly where everything is relies on digital now. The physical attachment of Chinese instrument is now slowly fading with everything started to be digital where extracurricular is neglected therefore by trying AR technology may attract people by following the current trend. Which is why by putting aside the old-school ways and try a new way to promote Chinese instrument in Malaysia. With that say social media have been blooming widely since 2013 where internet become more accessible which making streaming platform be more active across the world like Twitch, the same year YouTube becoming the most popular viewing video site there is.



Figure 6. AR in Architecture.

With technology advancing Augmented Reality (AR) have been a trend throughout the years where it has been uses in professional field such as Architecture, Graphic Design, Teacher and others (Mekni and Lemieux 2014)[10].



Figure 7. Pokémon Go

The trend started when Pokemon GO released during 2016 where they utilise the AR technology using GPS location base (Pokemon Go 2021) [24]. That when many people notice AR technology. Following it currently is Snapchat where they launch their own lenses, filters and effect in AR then Facebook, Instagram, Pinterest and Tik Tok follow along with the trend (Debra 2020) [9].



Figure 8. AR Filter

Researches about AR has been conducted in Malaysia where mostly research about medical, educational and etc. In music industry, most of the research about preserving

heritage, learning opportunity for primary school, Introducing traditional musical instrument with marker based technology and other which can be found from “Google Scholar” if interested. The point is traditional music has been developing where sometimes the origin stories are getting less known to youngster this day. This AR technology teaching is still uncertain in education. It may due to lack of educational experiences in the development of AR learning that many stated theory and possibility only where an attempt is less lightly occur (Wang, Y.2017)[12]. The Project will be conducted using some survey form to undergraduate students to get to know level of perception about Chinese instrument and their thought on applying AR will impact their opinion or not and conducting experimental research on making it as application and the result will be significant . The main objective of this research is to identify the characteristic of Chinese instrument by applying AR technology where it can be utilized as a common practice in many field in Malaysia. Using AR technology as a key to keep the heritage strong no matter how much time has passed.

2. Literature Review

2.1 Augmented Reality (AR)



Figure 9. Augmented Reality (AR)

Augmented Reality (AR) is the integration of object that is created using computer whether is in form of video , audio , 3D content using devices such as smart phone, laptop, desktop and eye glasses (Imbert et al. 2013; Lazim and Rahman 2015)[7]. The capability on Augmented Reality is now available in all device which can be supported android and IOS. By tracking the real-world objects and surrounding area using augmented stimulation which will help the user to fully immerse in the stimulation (Huang and Hsu Liu 2014; Ng et al. 2013) [8].



Figure 10. Type of Based for AR

According to Johnson, et al. (2010) [16], AR has 4 type of base which is marker-based, marker less-based, Projection based and GPS based. Marker-based are consist of three things which include a booklet for offering marker information, a gripper for getting information from the booklet and converting it to another type of data, and a cube for augmenting information into 3D-rendered information on a screen. Next is, marker less-based need a tracking system that involves GPS (Global Positioning System), a compass, and an image recognition device. Marker less based have wider scoop area because they function anywhere without the need for specific mark or labelling.



Figure 11. Projector

Projection based AR which uses projector that allow projecting digital product on real time surfaces. The devices itself are rather smaller than area of the projection surface which is unique compare with other approaches like normal displays(Sand O 2016) [25]. GPS based is the same with Markless base where it can be done in real time and GPS system like showing sign or pop up just by using devices recognition of the area and internet for it to find the data through cloud base storage (Hang H et al, 2012)[26]. Fun fact is the term “augmented reality” was first coined by researcher name Tom Caudell, at Boeing in 1990, who was asked to improve the expensive diagrams and marking devices used to guide workers on the factory floor (Caudell and Mizell 1992) [11]. In Malaysia AR technology has been applying in many professional field such as gaming, tourism, and more (Lazim and Rahman 2015) [7]. AR is one of the main pillar in Industry 4.0

where Malaysia's government encouraging public and private sector to get on board the digital transformation through Industry 4.0 adoption (KianLam, et al 2019) [18].

2.2 Mobile devices



Figure 12. Mobile Devices for AR

AR has been one of the technology that been expanding rapidly due to ease of accessing information easily and conveniently thanks to mobile devices also known as smartphone nowadays and current high tech technology(Cano & Sevillano. 2018)[13]. Due to current technology where smartphone is more than enough to run data resources regarding AR technology which is proven in research conducted regarding mobile learning (Claudio, Thomas and Vickel.2017)[14]. Mobile AR used the concept of only mobile, where the system is avoided from conditioned environments for example, research labs and work station. Mobile AR allows user to have AR experience anytime and anywhere. The requirement for using Mobile AR that is camera, data storage and access, wireless networking and platform base (Hollerer, et al 2004) [17].

2.3 Musical Instruments



Figure 13. Instrument in AR

Traditional musical instrument are heritage that must preserve with younger generation to keep the traditional musical instruments from forgotten (Fransiskus et al 2019) [23]. According to (KianLam, et al 2019) [18], AR has developed rapidly in music industry. The influence of music education in Malaysia has been a factor due starting with the neighbouring countries like Thailand, Indonesia and etc. Next the history of colonialists and popular Western music that have come (KianLam, et al 2019) [18]. It has shown the trend of article research conducted by those who was interested in music industry which from 2012 to the current present.

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3. Research Methodology

Research Methodology is a research where the reader understand the progress of the work and the method of the work uses to get it done. In this project I will be doing an application of Augmented Reality for Android by using Software call Unity and conducting a survey.



Figure 14. Unity Logo

Unity is a cross-platform game engine developed by Unity Technologies during June 2005. Unity is a game development platform where users can experiences in 2D and 3D interface by creating the game or application (Unity, 2021) [27]. The engine offers a primary scripting API in C# for both the Unity editor and games. C# is a programming language where programmers uses during the development of software, website and etc. With Unity Technology latest update Unity is now supported with AR technology by using plug in software which is call Vuforia a software that specialist in AR technology.



Figure 15. Vuforia Logo

Vuforia is an augmented reality software development kit (SDK) for mobile devices which is how an augmented reality application is developed. But it is useless by itself because it needs a software development environment like Unity, Eclipse and etc. for it to work. This software is capable in using computer vision technology to recognize and individual tracking of the object captured by the camera in real time. The Vuforia SDK supports a variety of 2D and 3D target types including “markerless” image Target, 3D Modal Target, and a form of addressable Fiducial Marker also known as VuMark. This SDK is supported in android and IOS, while enabling the development of AR application in Unity that can be carried from both platforms. Vuforia provides an API in Java, C++ and .Net languages through an extension to the Unity engine. (Alexandro, Josep. 2013) [19].



Figure 16. Blender Logo

Blender is a free and open-source 3D creation suite. It has support of the 3D pipeline such as modelling, rigging, animation, stimulation, rendering, compositing and motion tracking, even video editing and game creation. Blender is cross-platform and can be run on Linux, Windows and Macintosh computer (Blender 2021) [22].

3.1 Participants

The target audience will be University Graduate to test their level of knowledge regarding about Traditional Chinese Instrument and AR. The questioner I will be preparing will be seeing their opinion in this matter. Of course, the places to get the respondent will be in social media like Facebook, WhatsApp's and etc., because the reason is due to pandemic that occur during year 2020 until the present day where it is not completely cured from it.

3.2 Project Procedure

The Steps of making this project will be in stages shown in figure 16:-

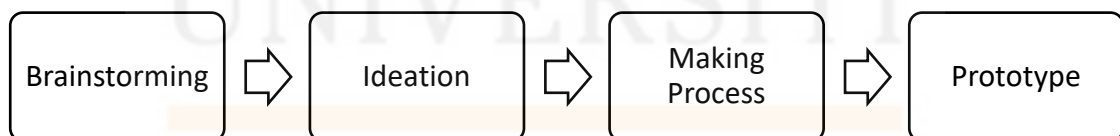


Figure 17. Chart Flow of Design Product

The brainstorming stage is where I simply find an inspiration of how this project will be end up. This process where I find any method available on making an AR through Google. The result I get when searching which AR has 3 different types of method which

is Marker-Based, Markerless-Based and Location-Based. AR Marker based is a method where the projection of the product will be shown on a piece of paper when scanned using the smartphone camera where most of them have AR system installed. The 1st step is by uploading the image or 3D product into the system online and set the specific marker on the paper similar to QR code when scanned the thing it will reader the data and display it in the phone. Markless based method is where there is no need required a platform or paper to scan for the product to pop out. The best example for describing this is IKEA AR apps where it can place an object using camera lens without using a platform as the key to pop out in the screen. The product can place anywhere without any worry where the furniture is not really exist in real life because it serve as reference before buying the real thing from IKEA. Location base method is where it required to use GPS to identify the location and can be uses in real time. The popular apps which uses this system will be Pokémon Go.

The next stage is where the idea come together by choosing which method to use and what software will be using. The method I will be using is marker base AR for my application. Marker-based AR require a static image to refer as a trigger photo that can scan using mobile device via an AR app. The mobile scan will trigger the content that have been program on top of the marker like (video, animation, 3D or other). The marker recognition can be local or cloud-based which means that marker databases can be stored on device and recognition also happens on device. Database can also be stored on a cloud and recognition happens on a server. Device-based recognition can be used immediately if cloud recognition is used for it would download content from the server. Then make planning on how to create the idea into application.

Making process is where the development of the application starting from making idea into product starting with emulator and encoding it for the function working then

making prototype for checking the error and bug. The software that will be using during the development that is Unity and Vuforia SDK. The product design will be done using Blender.

Prototype is an early sample model also known as beta version where the product is still in testing stage (Blackwell et al 2015) [20]. It design to provide a real things that can be proven rather than theoretical one like hypothesis (2012) [21]. Prototype is a product that cannot be release to the public yet due to confirmation of the product will not be any technical difficulties when officially release to public.

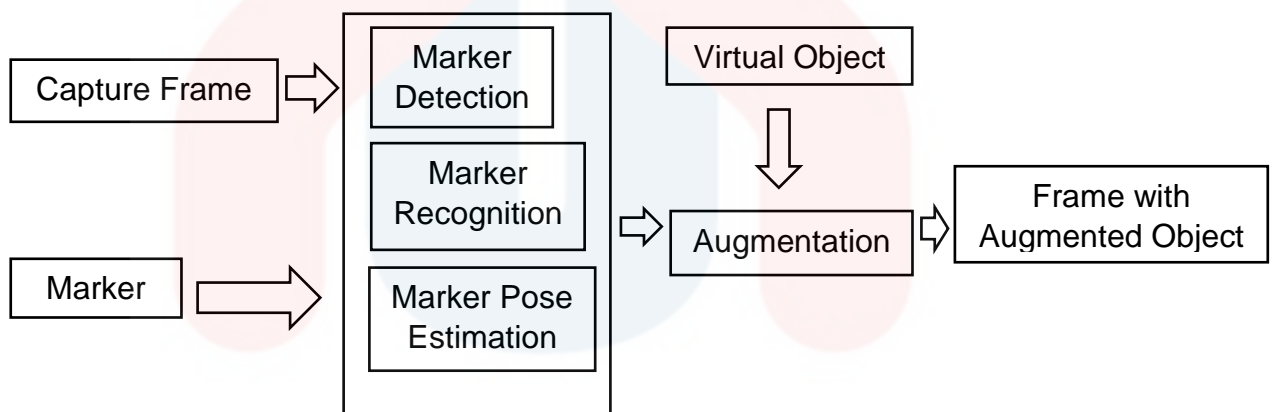


Figure 18.AR Work Flow

The Figure 18 show the work flow of the Application for it to work. First, open the application where the scanner pop open then the “Capture Frame” which is from back camera then search the “Marker” which is printed out as a base which is prepared beforehand for it to recognise the image that has been coded similar to QR (Quick Respond) Code. Then through “Marker Detection” where the AI (Artificial Intelligent) will start reading the code from the marker and start recognising it and start pop up the content that has been installed in it. Finally proceed to augmentation where the “Virtual Object” will project in the application which is the 3D object that created using Blender.

3.3 Survey



Figure 19. Google Form

The survey will be conducted online using “Google Form” where I will sent the links through online platform in order to gather report for this research to get to know whether the numeric statistic shows how many percent people reacts for this research. The Survey will be qualitative survey where the question will be closed end and open ended questions around question will be asked in the survey. The questions will consist of how AR can be implemented and how their thought of it.

4. Data Analysis

4.1 Application Progress

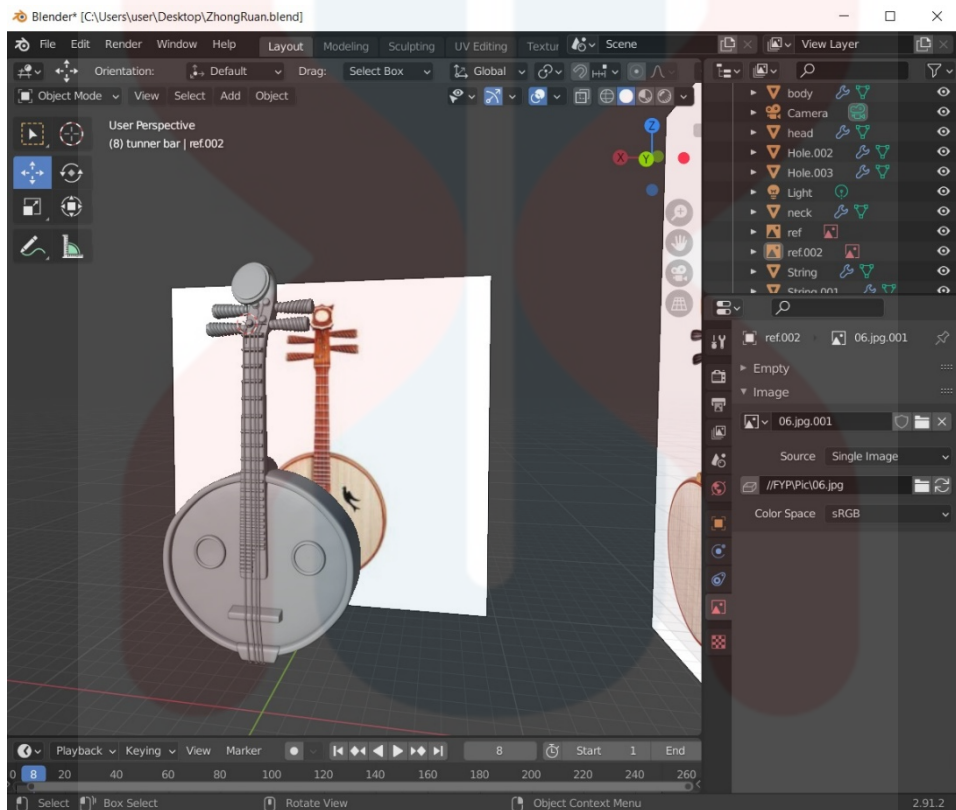


Figure 20.Design Process using Blender.

The figure 20 shows the process of making the design into 3D object and adapt it into AR system.

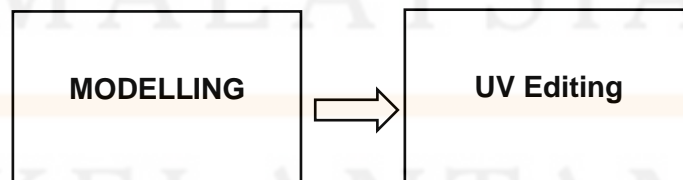


Figure 21.Product Design Process

The modelling progress is where the 3D object is created by reshaping the object using cylinder, cube and circle which provided in the software. Modelling is a method uses shape object and tracing image into 3D object using step by step.

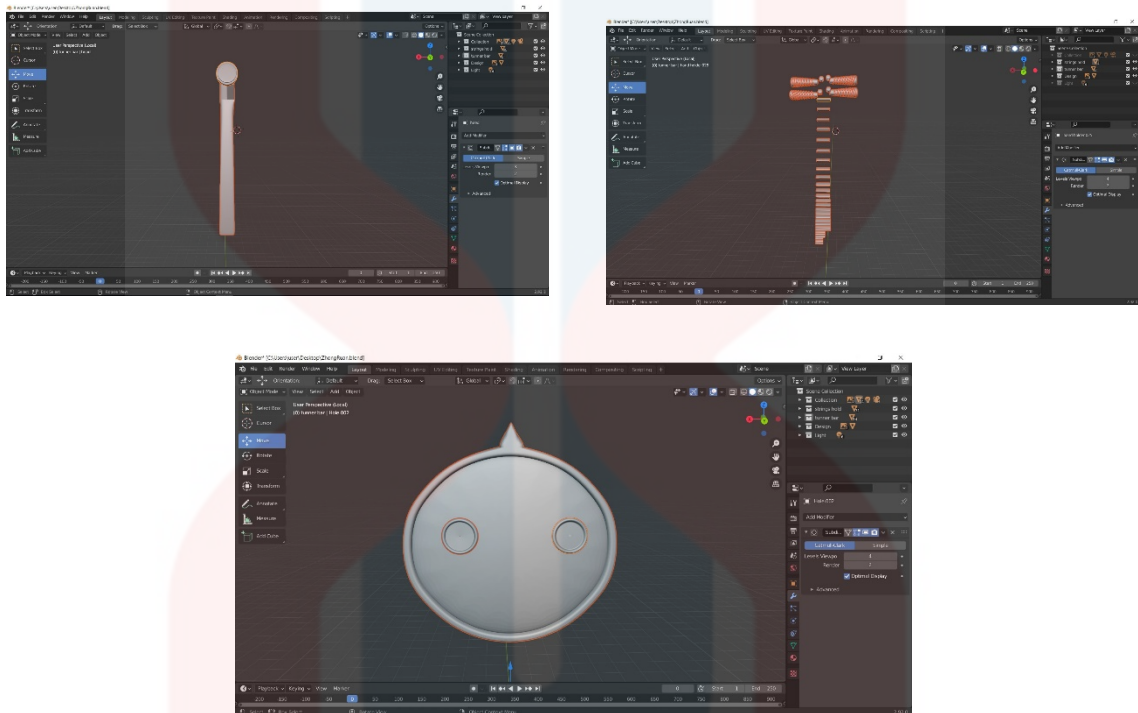


Figure 22. Modelling parts

The Figure 22 shows that every part is make separately from the head to body. It shows the progress of modelling by making every part one by one and then combine it together into an object which is shown in Figure 17.

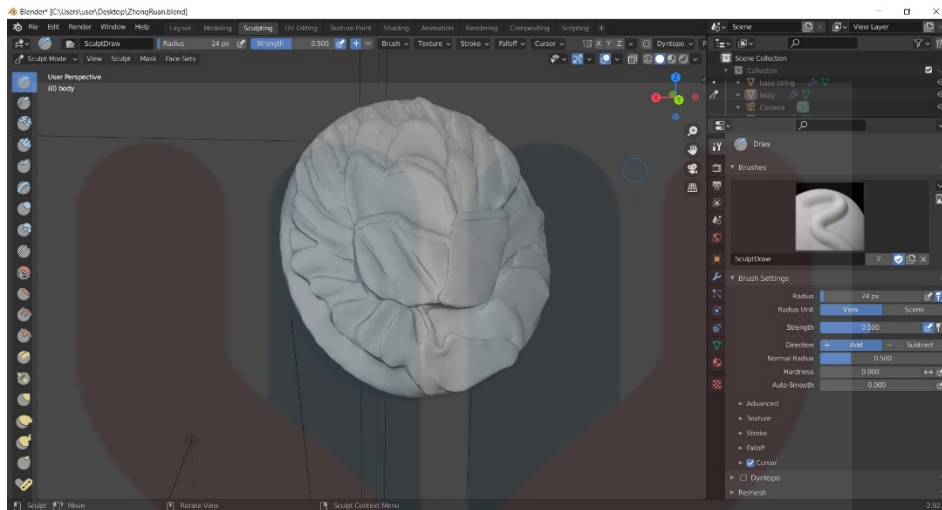


Figure 23. Head Design

The head design was made using sculpture editor which crafted the design on top of the head by tracking with the image provided from internet. Sculpture is a method where you uses brush to create the object by tracing it directly rather reshaping one by one.

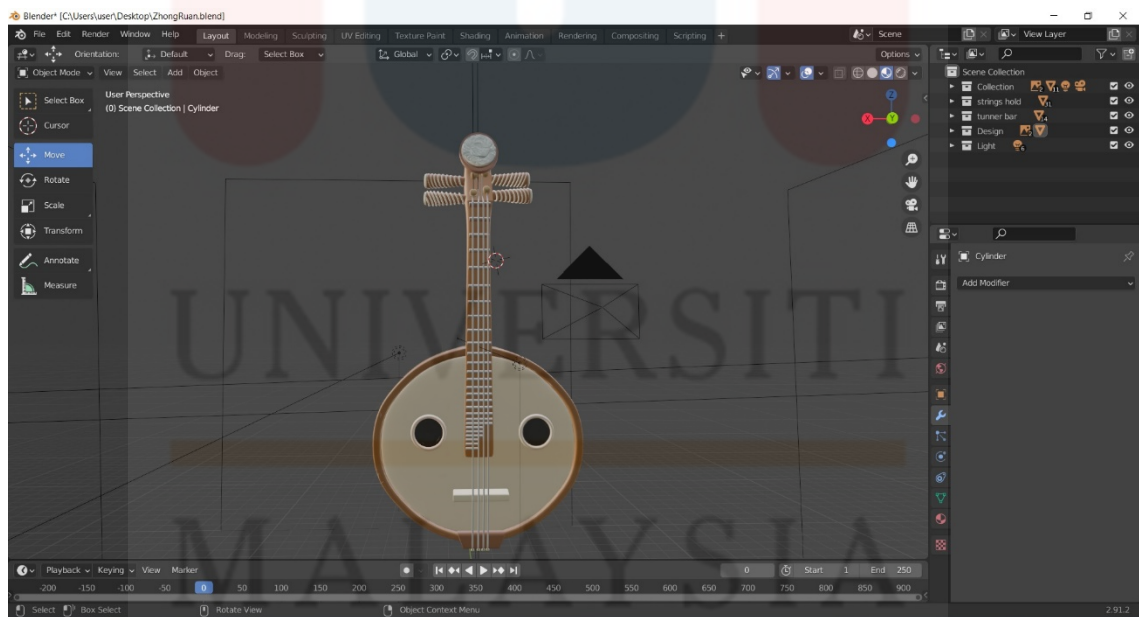


Figure 24.Coloured Design

Next, is applying colour to the object by using Texture editing in Blender where this method can be paint directly.

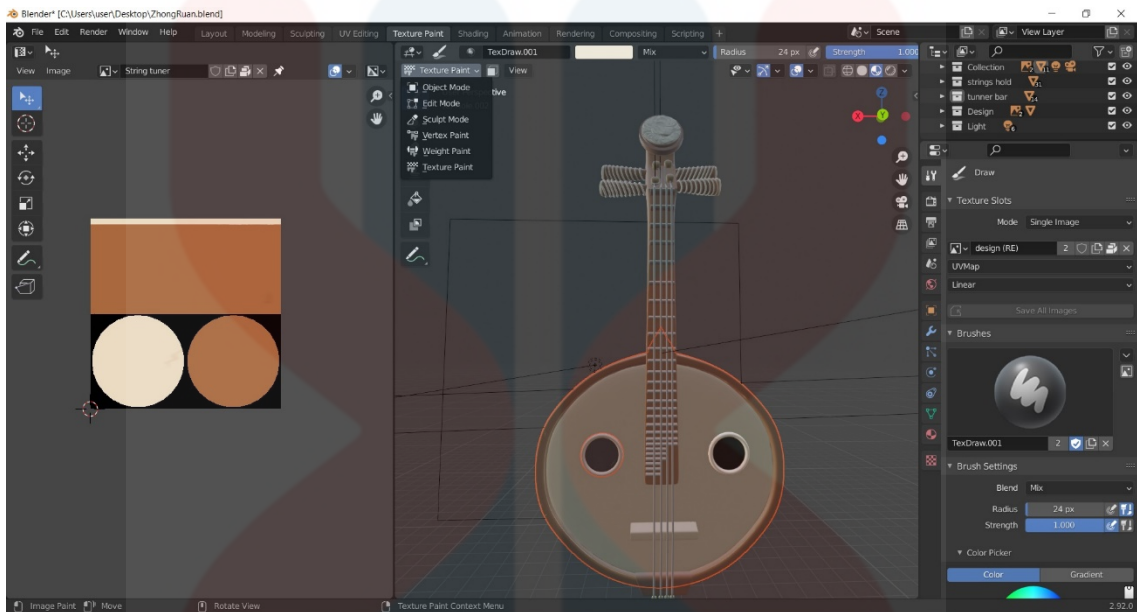


Figure 25. UV editing

The step will be select the object in “object mode” for any part to be painted then go to “texture mode” it will bring you to the editor then go paint editor and set new material to be painted and start painting the selected object the texture of painted object can be seen in UV mapping editor and saved for external uses. Then repeat the process again until completely coloured that shown in Figure 25.

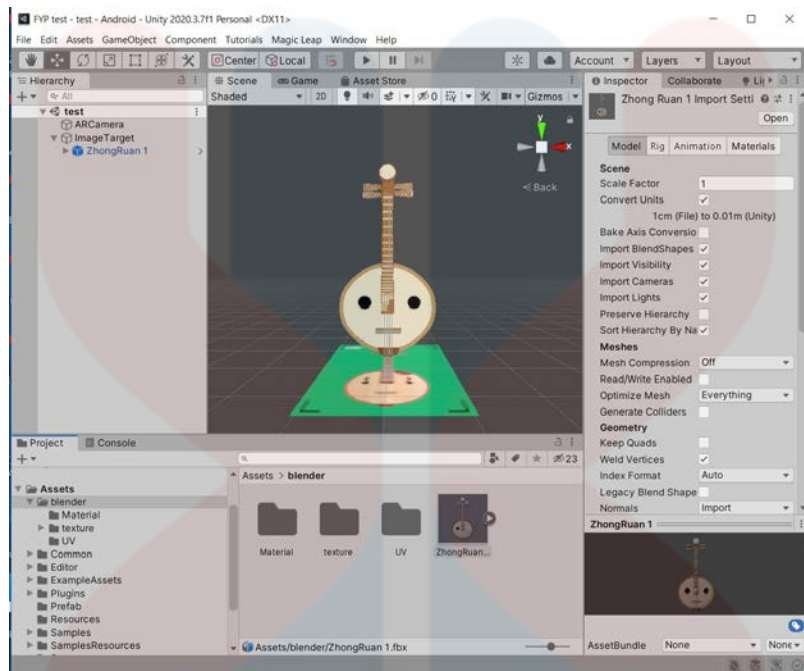


Figure 26. Show the Progress in Unity

The figure 26 show the next step which import the complete model into Unity for making the AR application.

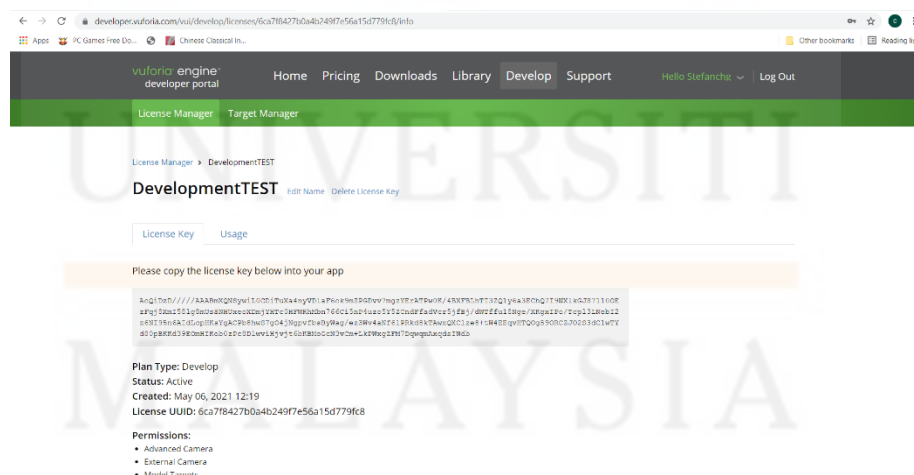


Figure 27. Vuforia License Manager

For AR to be functional in Unity I need to make a license key in Vuforia to gain access to their function and incorporate with the picture for it to be detected by the system and show the modelling that I have make in Blender when scanned using phone.

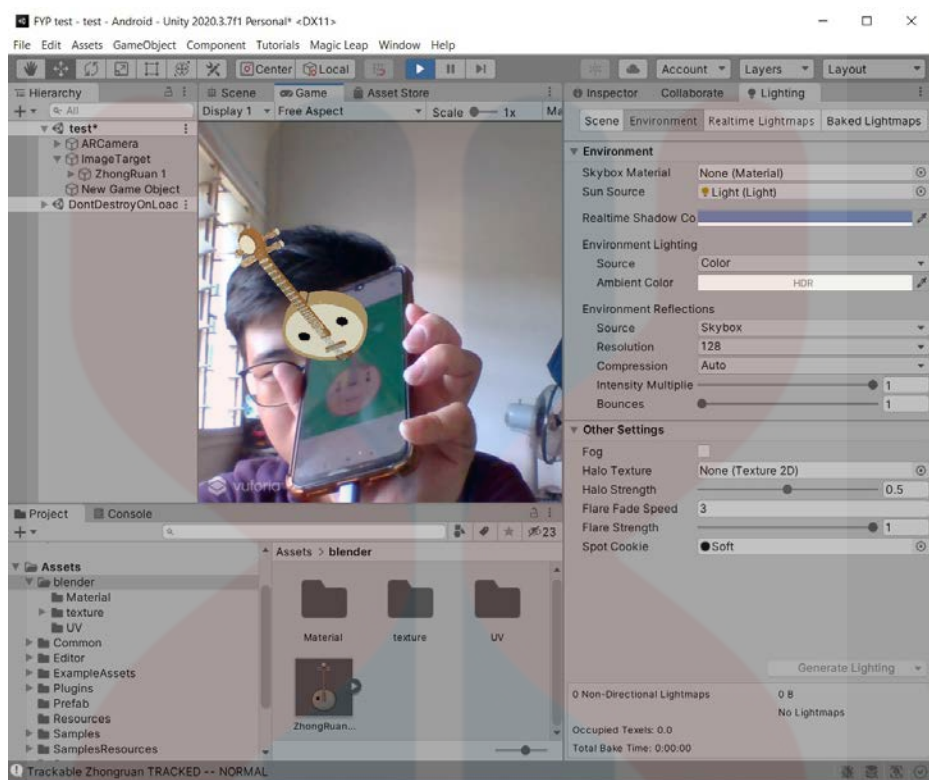
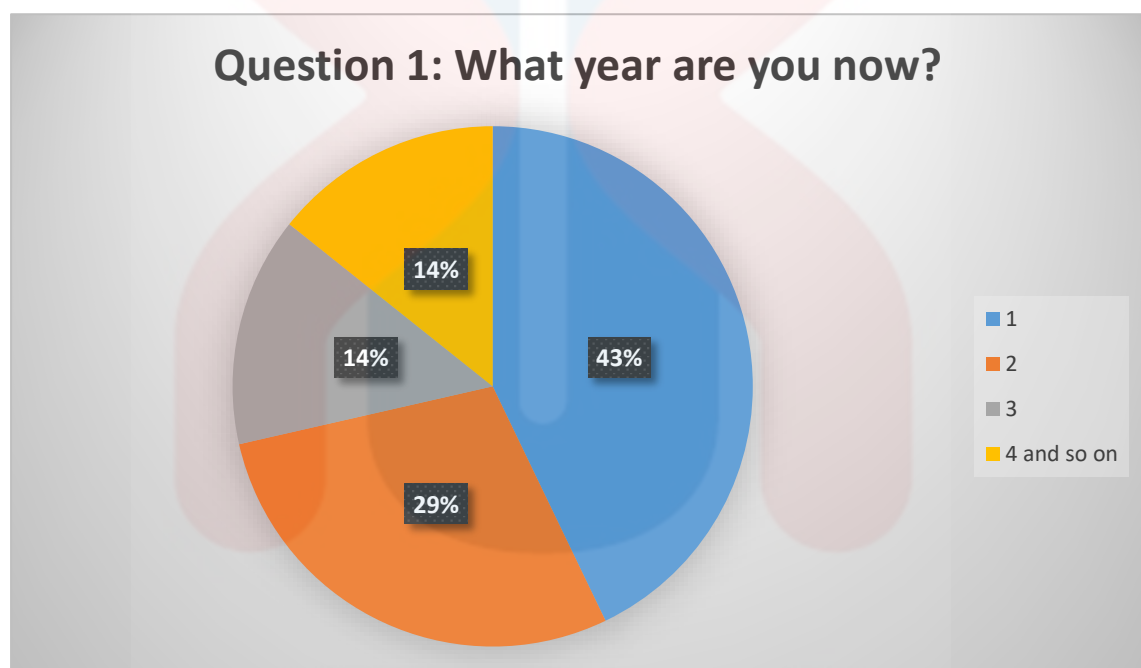


Figure 28. The Testing Period

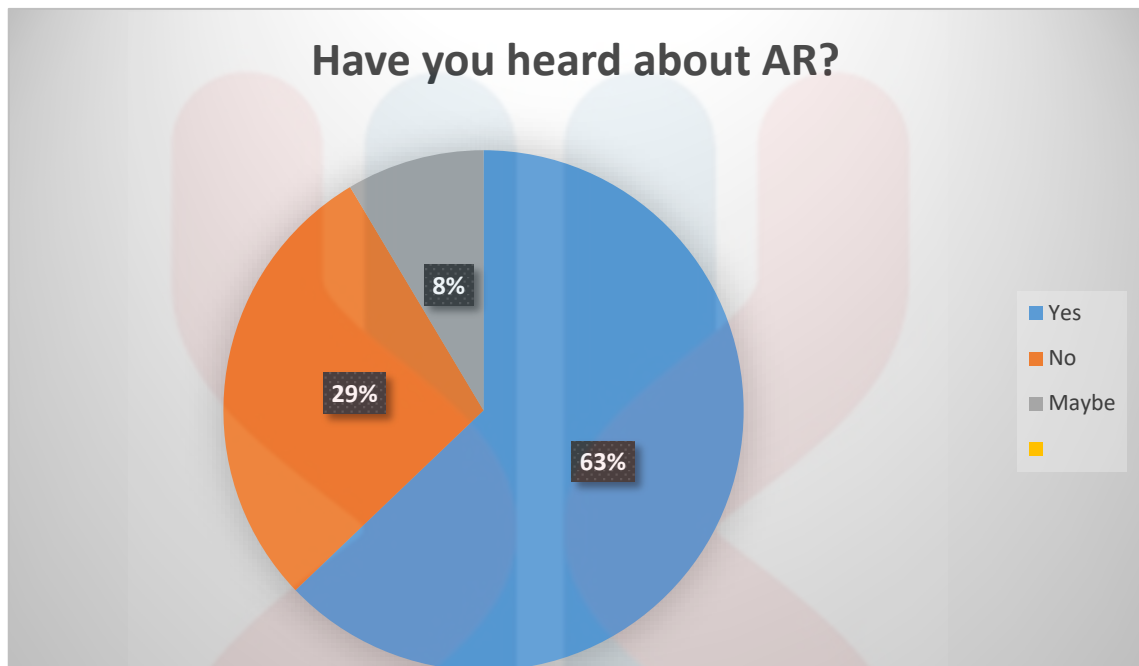
After adding the license key and set everything the 1st testing resulted with darker colour on the object because the lighting is not set properly. Then the 2nd test show the result better with adding the lighting source from Window-Rendering-Lighting and then go to scene change the source light from environment panel and choose ambient colour to set the brightness and then the result will show in figure 28.

4.2 Online Survey

This is about the analysis data about the survey I have conducted through online due to current issue where I physical contact are not recommend by government and society.



The chart 1 show that the number of respondent are consist of year 1 which is the highest which is 43% then following will be year 2 that is 29% and lastly with both the same percentage that is 14%.

**Chart 2**

The chart 2 show the number of respondent understand what is AR (Augmented Reality) is about. It shows that 63% say yes as they understand the basic of AR is while 29% shows say no and lastly the remaining 8% shows that they are not sure whether they have heard it or not.

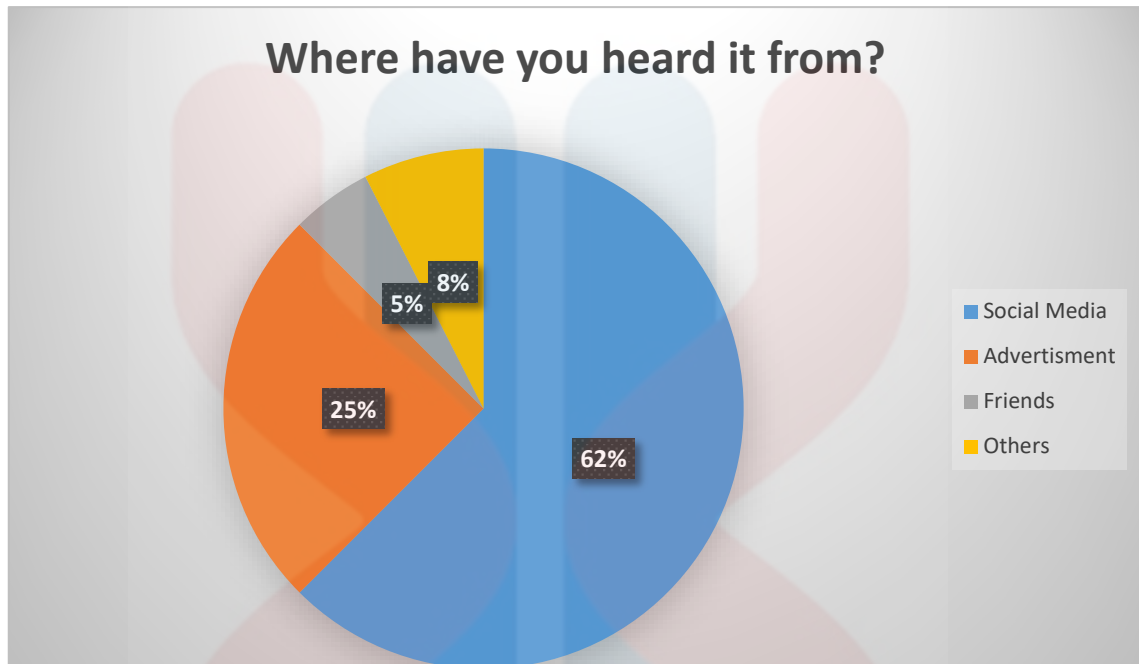


Chart 3

The chart 3 show where the respondent know about AR from what source. The number of respondent are much high with 62% are from social media like tik tok, Instagram, Facebook and so on whereas the 25% are from advertisement which has been hot the news a years back like Pokémon go. Then following the 2nd lowest 8% is others which I receive from some of their opinion is from school, hobby and so on. Lastly with 5% are from friends who shared the news about AR.

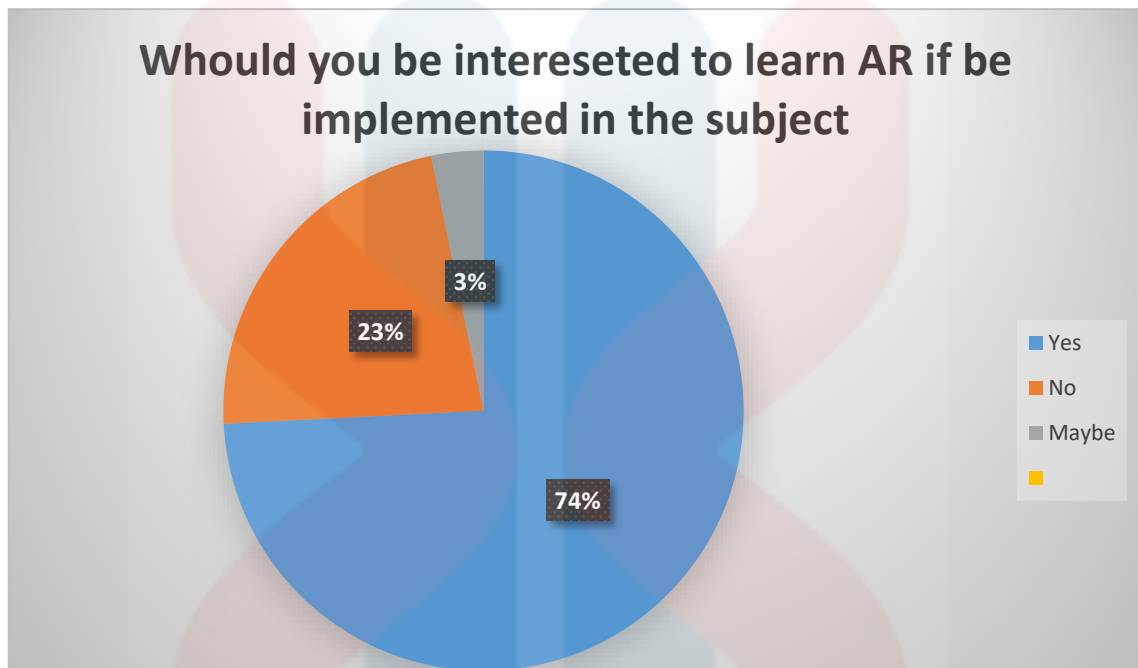


Chart 4

The chart 4 show the percentage of 74% is interested in learning if implemented and 23% is no to the idea and 3% is saying maybe for not sure about it and still thinking.

The reason that I have found in the next question following the chart is that Person A think that it will be interesting if it can be uses in teaching and all but will it be practical for teacher be able to teaches in time if needed to learn AR as they need to guide students at the same time. Some respondent say that the traditional way of teaching will be lost it meaning if everything is changes to digitally of course it will have pro and con ether way. There are some respondent are not sure because some are not familiar with the term AR and the way it work and function build. Some respondent are agree as it will be a new experience for teacher and student to learn something new and add some fun element in it without losing their motivation in learning.

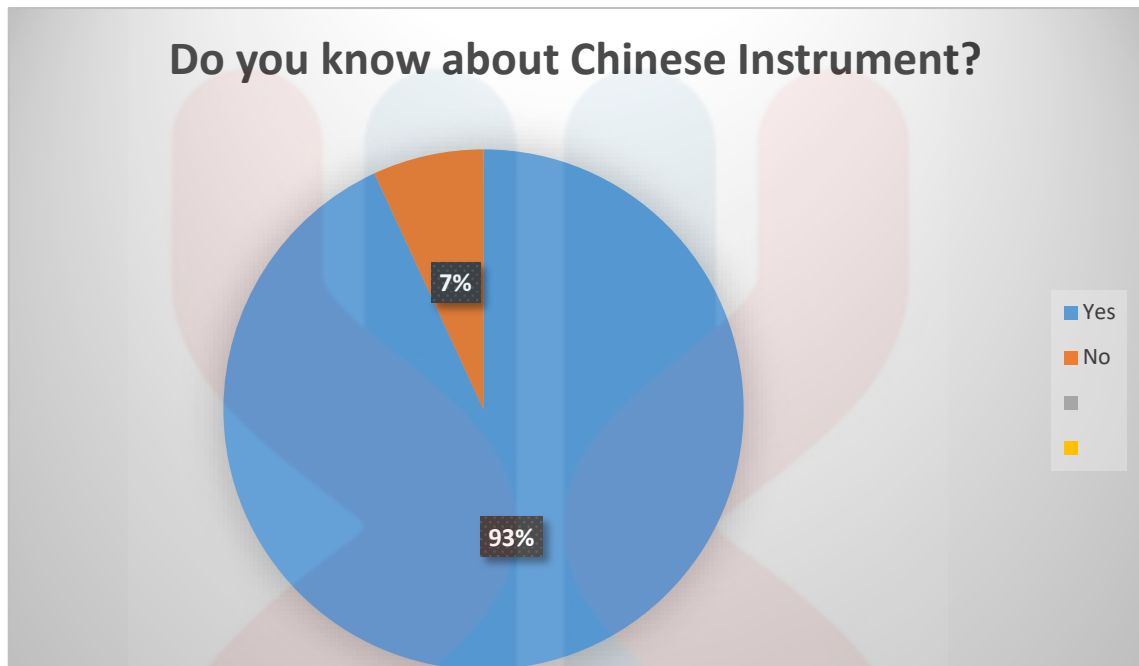


Chart 5

This question is about how well known Chinese Instrument is among graduate. The Chart 5 shows that 93% say yes where the remaining 7% say no. This shows that almost everyone know what Chinese instrument is.

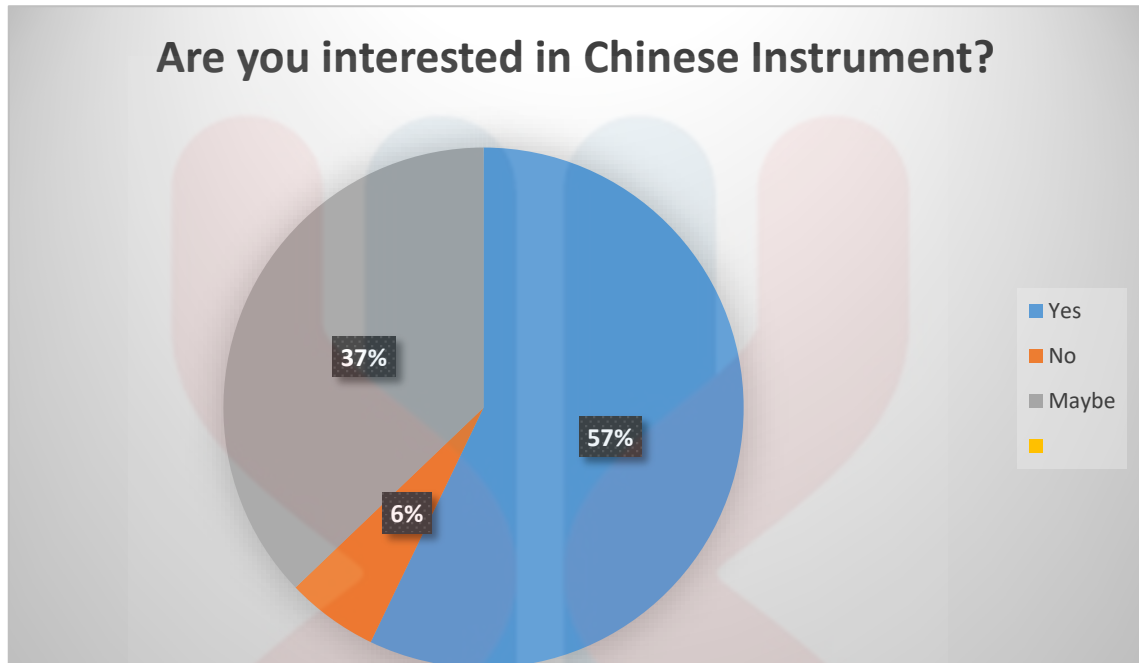


Chart 6

The chart 6 shows that highest percentage of respondent responded 57% has given yes where only 6% are saying no and the remaining 37% are given the answer maybe as they are not sure. This show that there is still many ways to promote Chinese instrument.

By my opinion, I think that the number of responded are already quite knowledgeable about AR and Chinese Instrument where it shows their interest in learning and gain knowledge and even concern whether it can be done and how will it be done if so.

CONCLUSION

Aim

The aim of this project is to create an android applications with augmented reality with Chinese instrument.

With the physical attachment in extracurricular is slowing decreasing for Chinese instrument the application that I have been working on for a certain period. It shows that the progress is not very easy where the modelling process take time and implemented it into Unity is not an easy task as trial and error will often pop up and time to resolve it. Even I am not good at it I have given my best in solving the issue and the outcome is still lacking in some part. I felt that there is still improvement can be done with the application because nowadays browsing internet for information is been my learning places from time to time.

The research I have read from others at google scholar they have been people researches about AR like for children education, for disability, music association and so on. It has shown that the potential of AR is still increasing for people to recognise it as a new platform like Pokemon GO where you can capture a pokemon in real time environment or Tik Tok AR filter that has been popular nowadays. This show that AR can be done in many different ways as long as one is willing to do it. The result have proof that the level of their perception is significant and they are willing to learn more about it if the chance arise.

In future work I would like to add a few more element and spend more time in learning adding User Interface (UI) function and improve the modelling time for the design as it has impact on my progress time during this research. I hope that people can at least try once about playing or making AR for the sake of knowing the potential it can make as

other country are advancing into more higher level and we should keep up the pace with the technology improving every day passes.



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References

1. Wikipedia (2021). Music of China Retrieved January 9, 2021 from https://en.wikipedia.org/wiki/Music_of_China
2. Wikipedia (2020). Timeline of Chinese music Retrieved December 4, 2020 from https://en.wikipedia.org/wiki/Timeline_of_Chinese_music
3. Faye Chunfang Fei, ed. (2002). Chinese Theories of Theater and Performance from Confucius to the Present. University of Michigan Press. p. 3. ISBN 978-0472089239.
4. Travel Guide, (2019). Chinese Music Retrieved April 24, 2019 from <https://www.travelchinaguide.com/intro/arts/chinese-music>.
5. Jones. Andrew F. (2001). Yellow Music — CL: Media Culture and Colonial Modernity in the Chinese Jazz Age. Duke University Press. ISBN 0-8223-2694-9.
6. Sari Xu, (2019) Chinese Music 10. Bayin: 8 Tones of Chinese Traditional Music. Retrieved April 1, 2009 from <https://interactchina.wordpress.com/2019/04/15/chinese-music-101-bayin-8-tones-of-chinese-traditional-music-xsy/>
7. Lazam, Nur Aniza Mohd, and Khailrul Aildil Azlin Abd Rahman. 2015. State of the Art Responses on Augmented Reality Application in Malaysia. International Journal on Sustainable Tropical Design Research and Practice 8: 28-34.
8. Huan, Tseng Lung, and Feng Hsu Liu. 2014. Formation of Augmented Reality Interactive Technology's Persuasive Effects from the Perspective of Experiential Value. Internet Research 24: 82-109.
9. Debra Aho Williamson. Aug 26, 2020. Augmented Reality in Social Media.

10. Meleni, Mehdi, and Andre Lemieux. 2014. Augmented Reality: Application, Challenges and Future trends. Applied Computational Science, 205-14.
11. T.P. Caudell and D.W.Mizell, "Augmented Reality: Application of head-up display technology to manual manufacturing processes," in system Science, 1992 Proceedings of the Twenty-Fifth Hawaii International Conference on, Vol 2. IEEE, 1992.PP, 659-669.
12. Wong,Y. Using Augmented Reality to Support a Software editing course for college students.J.Comput.Assist.Learn.2017, 33, 532-546.
13. Cano, E.V. Sevillano-Gracia, M.L.Ubiquitous Educational use of Mobile Digital Devices. A General and Comparative Study in Spanish and Latin America Higher Education. J. New Approaches Educ.Res.2018, 7, 105-115.
14. Claudio Aguayo, Thomas Cochrane, Vickel Narayan. Key themes in Mobile Learning: Prospects for Learner-generated Learning through AR and VR. Auckland University of Technology. Australasian Journal of Education Technology, 2017, 33(6).
15. Imbert, Nicolas, Frederic Vignat, Charlee Kaewrat, and Poonpong Boonbrahm. 2013. Adding Physical Properties to 3D Models in Augmented Reality to Realistic Interaction Experiment Procedia Computer Science 25: 364-69.
16. Johnson, I, Levine, A, Smith, R, &Stone,S,(2010). Simple Augmented Reality. The 2010 Horizon Report, 21-24 Austin Tx: The New Media Consortium.
17. Hollerer, T.H. & Feiner, S.K.2004. Mobile Augmented Reality, In K.H&H.A (Eds), Telegeoinformatics. Location Based Computing Servicesmputing Services, 1-39, Taylor & Francis Books Ltd.
18. KianLam Tan, Chen Kim Lim. Malaysia Music Augmented Reality (MMAR): Development of Traditional Musical Instrument using Augmented Reality.

International Journal of Innovative Technology and Exploring Engineering (IJITEE), 2278-3075, Volume-8 Issue-45, February 2019.

19. Alexandro Simonetti Ibanez, Josep Paredes Figureas.2013. Vuforia v1.5 SDK: Analysis and evaluation of capabilities. University Politecnica De Catalunya.
20. Blackwell, A.H, Manar, E, eds.2015 “Prototype”. UXL Encyclopedia of Science (3rd ed). Retrieved 13 July 2015 from
<https://en.wikipedia.org/wiki/Prototype#:~:text=A%20prototype%20is%20an%20early,by%20system%20analysts%20and%20users>.
21. “Prototyping Definition” (2012). Pc Magazine. Retrieved 2012.05.03 from
<https://en.wikipedia.org/wiki/Prototype#:~:text=A%20prototype%20is%20an%20early,by%20system%20analysts%20and%20users>.
22. Blender.2021. the Software. Received January 25, 2021 from
[https://en.wikipedia.org/wiki/Blender_\(software\)](https://en.wikipedia.org/wiki/Blender_(software)).
23. Fransiskus Panca Juniawan, Dwi Yuny Sylfania, Harrizki Arie Pradana and Laurentinus. 2019. Motivation Measurement of an Augmented Reality Traditional Musical Instruments System. Sriwijaya International Conference on Information Technology and Its Application (SICONIAN 2019). Advances in Intelligent Systems Research, volume 172.
24. Pokemon Go.2021. Received January 30, 2021 from
https://en.wikipedia.org/wiki/Pok%C3%A9mon_Go
25. Sand O., Büttner S., Paelke V., Röcker C. (2016) smARt.Assembly – Projection-Based Augmented Reality for Supporting Assembly Workers. In: Lackey S., Shumaker R. (eds) Virtual, Augmented and Mixed Reality. VAMR 2016. Lecture Notes in Computer Science, vol 9740. Springer, Cham.
https://doi.org/10.1007/978-3-319-39907-2_61

26. Huang,H., Schmiidt,Mm Gartner,G.(2012): Spatial Knowledge Acquisition with Mobile Maps, Augmented : Results from a Field Test. Cartography and Geographic Information Science, 39(2), pp. 107-116.
27. Unity (Game engine), 2021. Received January 26, 2021 from [https://en.wikipedia.org/wiki/Unity_\(game_engine\)](https://en.wikipedia.org/wiki/Unity_(game_engine))