Task 1

Answer Research Questions: To answer my research questions I will need to do qualitative research, and investigation will be required to collect data and analysis.

Write a literature review: I will need to write a literature review to compare, discuss and analyse trusted papers that are related to my study.

Develop a prototype.

Test using the prototype: By using multiple users with different IT backgrounds.

Prove hypothesis on a targeted audience: My predicted research hypothesis needs to be proved at the end of my research to determine the relationship between two or more variables

2)

Gantt Chart attached

3)

Completed Work:

Since the submission of my SOI, I worked heavily on researching papers related into the area of my study, to have an idea how I can analyse and further enhance my research questions and hypothesis.

Mentor Meetings were conducted on average once every week.

My research hypothesis was finalized.

I researched trusted papers that are relevant to my study and gathered information that the researcher analysed to help me build my Literature Review.

Evaluated the sources that were found in the literature that I researched.

The themes, debates and gaps were identified form the studies I have researched.

I wrote a Literature Review by outlining the structure containing the research I have evaluated from the literature that I researched. This was done by reviewing the literature by identifying, analysing, and synthesizing it. A methodological approach was used in my literature review.

In my literature review I discussed and presented the available technology to use for my prototype development, including the pros and cons of my prototype.

In the conclusion of my literature review, I highlighted the research that is particularly relevant to my research topics, as well as any gaps in the literature.

In my literature review I found that According to Qiao, X. et al. (2019) Web-based AR (Web AR) provides a pervasive Mobile AR experience to the users, this is because of the many successful deployments of the Web as a lightweight and cross-platform service provisioning platform compared to App-based AR.

5G mobile communication networks has the potential to enhance the communication efficiency of Mobile AR in the Web-based approach. Web-AR allows to deliver an innovative technology to greaten our ways of interacting with the physical word. (G. Andrews et al., 2014, cited in Qiao, X. et al. 2019)

This is the reason why WEBXR was chosen as the main technology to develop this prototype.

Research was carried out on how to create the prototype and what libraries need to be used.

Code examples were researched to gather information on how other projects were carried out.

I used A-Frame that is optimized for creating XR immersive experiences providing an entity component system and allowing to instantiate objects and UI through declarative html.

A JavaScript Framework AR.JS (abstraction of JS ARToolKit5) is also used in my Web AR app to use give location base AR which is a GPS driven location experience. AR.js can be used on top of a-frame to allow Augmented reality.

The website is being hosted on the Archdiocese of Malta secure server. The server needs to be secured because to use AR on a Web-based application the location and camera of the smart phone needs to be accessed.

A tutorial was followed to have an idea on how to create the prototype that is similar to my research of study. Then custom code was created and changed on top of the tutorial with custom assets.

The google Firebase Realtime Database is also being used in my prototype to fetch data related to the parish that the user is present at.

Testing of my prototype is currently being done. I was able to display a gltf/glb file model in a specific location, and data was being fetched form the firebase Realtime database.

The research methodology was also started to analyse why the problem I am addressing is important.

The study design was specified by using a conceptual framework.

The sampling strategy of participants was also discussed to see how different users will interact with the prototype.

4)

Work to be done:

A Content Management System (CMS) needs to be developed to have administrative access to change the content that is shown in my WEBAR application. This will be the connection between the administrator and the database created using google Firebase Database.

The prototype also needs to be able to show the data from the google firebase real time database with information specific to the parish that the user is in. The information will be visualized in a way which is presentable to the user which needs to be clearly readable, accessible and presentable.

The Firebase Realtime database will be structured in a way which is correctly formatted and sorted to easily find/change the data fields.

A questionnaire to create qualitative analysis of the participants experience of the prototype needs to be created.

The questions will be semi-structure for I, as a researcher, will arrange phrases that will impact the participant's response. I will take care not to remark on any response the participant may provide, since this might impact the data obtained.

Testing of the prototype will be held by different participants with different IT knowledge. This will be done to have a generic idea of how people with different computational backgrounds react to my prototype.

Empirical research will be done due to the fact that I will be using interviews as well as observation.

Gather feedback form participants. After the interview I will ask the participants to give feedback on my prototype and what I can do to improve it.

Improve Prototype. From the feedback that was given to me by the participants, I will use that information to continue improve and adjust to make my prototype be more accessible and functional to future users.

Data Analysis of the participants usability gathered mainly from observing them use my prototype and through the answers to my questions that I presented to them after the prototype testing. The analysis will than help me to answer the research questions and prove my hypothesis.

Discuss User accessibility and functionality of my prototype (Empirical research approach).

Results needs to be discussed to show the analysis of how the prototype is used.

Critical discussion needs to be included about my research’s findings and show how this support the original objectives laid out for the dissertation.

Strong arguments need to be presented which will show how my findings may offer a valid contribution to the development of the area in my selected research or issues related to it.

Conclusions and recommendations need to also be done to evaluate the significance of the work done and give recommendations for any further investigations.

The list of references needs also to be included at the end of the chapters, as well as the bibliography and appendices.

Prototype development refining will need to be done after the recommendation documentation is done.

Abstract needs to be clearly written to summarise my paper, so readers can use it to decide whether it’s relevant to them before they read the whole paper.

Introduction documentation needs to be written.

Proof reading needs to be done before uploading the dissertation. Chapters, fonts, line spacing should be structured as stated in the dissertation guidelines and grading rubrics.

Proof reading modifications will need to take place after proofreading the dissertation and before uploading the dissertation to change (if needed) and create modifications in my dissertation

A viva presentation needs to be created to be used for my presentation of the dissertation viva.

Submission of viva presentation.

5)

Conclusion

To conclude, this report has shown what I am hoping to achieve in this dissertation and how far I have got in achieving this. I need to work harder on my methodology as the Literature Review took too long to finish up. The prototype should soon be done and I should start testing it out on different participants.

References:

Qiao, X. et al., 2019. Web AR: A Promising Future for Mobile Augmented Reality—State of the art, challenges, and Insights. Proceedings of the IEEE, 107(4), pp.651–666.