6COSC023W – Final Project Report

**ARTVISIO**

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This report is submitted in partial fulfillment of the requirements for the

BSc (Hons) Computer Science degree

BEng Software Engineering degree

at the University of Westminster.

School of Computer Science & Engineering

University of Westminster

Date

# Document Scope

The purpose of this document is to describe and reflect on the processes that took place in developing the Final Project. Discuss any ethical issues associated with your project and explain the methodology adopted to develop its design, implementation and testing.

All chapter word counts in this document are approximate and are not intended to be prescriptive.

*All sections in orange (like this one) must be removed before submitting the report.*

# Declaration

This report has been prepared based on my own work. Where other published and unpublished source materials have been used, these have been acknowledged in references.

Word Count:

Student Name:

Date of Submission:

*This is an important section!*

*Add the updated word count (do not count words in the Acknowledgments, Table of Contents, Table of Figures, Table of Tables, References, Bibliography and Appendix). Add your name and the date of submission.*

# Abstract

*500 words*

*Summarise here the problem statement and the project aim(s). Briefly describe the methodology followed, the main results, your conclusions, and observations.*

# Acknowledgements

*Thank those who helped you build your project and supported you during its development if you wish to hear*.

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*Provide a list of tables (if any), linking table numbers to page numbers. If you can, hyperlink the page numbers/tables*.

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# Introduction

This project is an ambitious endeavour to revolutionize the art industry by introducing a digital platform that fundamentally transforms how art is shared and experienced. With the goal of creating a universally accessible and engaging space, the project seeks to address the current limitations of the art world by providing a solution that is inclusive, educational, and innovative.

In this introduction, we have outlined the aim to create a new digital ecosystem for art, detailed the objectives that will guide our development, and discussed the problem domain we aim to address. As we proceed, this project will endeavour to meet these challenges head-on, leveraging technology to foster a richer, more connected art world.

## Problem statement

*500 words Give some background on the problem you intend to solve and the need for the software/application. Use references to support your statements, when possible, illustrations, diagrams, and figures, if needed.*

The realm of art has been a hub for creative expression and progress for ages. Nonetheless, we cannot overlook the obstacles it encounters with regards to accessibility and outreach. Although conventional modes of exhibiting art have served us well, it is now imperative to adopt fresh technologies and seek inventive approaches that can aid us in connecting with a larger and more diverse audience. By harnessing virtual reality and multimedia installations, we can generate more captivating and interactive experiences that are likely to appeal to the tech-savvy generation. This transformation will not only benefit artists and art enthusiasts but also prove advantageous to budding talent seeking the exposure required for success.

It's regrettable that the physical confines of galleries and museums can impede the presentation of art in all its diversity. The finite nature of these spaces can pose challenges to curators and exhibition planners, who must contend with the logistics of transporting and setting up art, often without the necessary resources. In such circumstances, institutions with limited financial and staffing capacities may be forced to prioritise established artists over emerging talent. This can result in a more conservative approach to exhibition planning.

The limited physical spaces of art exhibitions can inadvertently Favor established artists over emerging talent, hindering diversity. Additionally, navigating the art market can be challenging for newer artists. This, in turn, may limit the potential for emerging artists to gain exposure and recognition, contributing to a lack of diversity and inclusivity within the art community. Therefore, initiatives like mentorship programs, grants, and funding opportunities for emerging artists are crucial to fostering a more vibrant and dynamic cultural landscape.

The limited dissemination of art techniques and knowledge creates a barrier to entry for many aspiring artists, leading to a lack of diversity and inclusivity within the art community. To address this issue, institutions and established artists should provide access to their knowledge and techniques through mentorship programs or public workshops. Additionally, initiatives like grants and funding opportunities can support emerging artists financially, fostering a more vibrant and dynamic cultural landscape.

Furthermore, the current methods used to display and share artwork are not conducive to the digital-native generation, which seeks immediacy, interactivity, and immersive experiences. The static displays and silent galleries seem increasingly anachronistic in an age where virtual reality, interactive installations, and multimedia experiences are becoming the norm. The art world's reluctance to embrace these technologies hinders its relevance and ability to engage with a broader, more technologically savvy audience.

It's become increasingly apparent that the art world could benefit from a software application or platform that effectively addresses its current challenges. Thanks to the power of digital innovation, there is enormous potential to create a virtual space that can transcend physical distance and time constraints. This would allow the art world to expand its reach to new audiences while democratising art display by rotating diverse works without physical space limitations. Additionally, such a platform would provide emerging artists with a valuable opportunity to showcase their work, facilitate the sharing of knowledge and techniques, and make art education more accessible and interactive.

The realm of art encounters various challenges that impede the availability of art and education. To address this, we present a website application that is a hub for cultural exchange, learning, and exploration - unrestricted by physical boundaries. We aim to establish an interactive, immersive, and globally accessible platform that promotes inclusivity and encouragement for artists and enthusiasts worldwide. Our method aligns with the shift towards accessibility and democratisation of art and education in our digital age. We invite you to join us in cultivating a more inclusive and supportive art world that empowers everyone.

## Aims and Objectives

*300 words the aim(s) describe, in a few sentences, the overarching purpose(s)/intention(s) of the software/application. What is the point of developing the software/application, what you wish to achieve? Objectives describe in detail the steps you will take to fulfil the project aim(s)*.

1. **AIM**

This project aims to spearhead a revolutionary shift in the art industry by crafting a digital ecosystem that transcends traditional boundaries. This platform is envisioned as a beacon of innovation, making the art world more accessible and engaging for a global audience. The project is designed to enable a symbiotic relationship between artists, galleries, educators, and art enthusiasts, fostering an inclusive environment that encourages interaction, learning, and sharing of artistic experiences.

The project aims to create a space where traditional art exhibitions' physical limitations are overcome. This digital convergence seeks to amplify the voices of emerging artists, providing them with the exposure necessary to thrive in the global art community. By integrating cutting-edge technologies, the project strives to curate an immersive experience that resonates with the sensibilities of contemporary audiences, thereby revolutionising the way art is consumed and appreciated.

1. **Objective**:

In pursuit of our aim, we have delineated a series of strategic objectives that will be instrumental in realising our vision:

* **Development of a Virtual 3D Art Gallery:**

We will construct an immersive virtual gallery that mimics physical art spaces' aesthetic and emotional impact, enhanced with optional spatial audio features for a multi-sensory experience.

* **User Requirement Gathering:**

Through comprehensive stakeholder engagement, we will capture diverse insights that will inform the design and functionality of the platform, ensuring it meets the nuanced needs of its users.

* **Diverse Artwork Rotation:**

By collaborating with art historians and curators, we will curate a dynamic range of artworks that reflects the rich tapestry of global artistic expression, powered by an algorithm designed to personalize the user experience.

* **Accessibility and Inclusivity:**

We will prioritize making the platform accessible to all by conducting rigorous usability testing and incorporating real-time language translation features, dismantling language barriers, and creating a universally welcoming space.

* **Flexible Exhibition Design:**

The platform will empower curators with advanced tools to design and adapt virtual exhibitions, ensuring that the gallery remains a vibrant and dynamic space for artistic exploration.

* **Support for Emerging Artists:**

We will establish networks and resources to mentor and guide emerging artists, aiding them in navigating the complexities of the art world and promoting their work effectively.

* **Educational Enrichment:**

Interactive tours and educational materials will be developed to enrich the understanding of artworks, drawing on historical and contemporary gallery practices to engage and inform visitors.

* **Future Improvement and Expansion:**

The project will continuously evolve, seeking partnerships and exploring new technologies like VR to further enrich the user experience and expand the platform's reach.

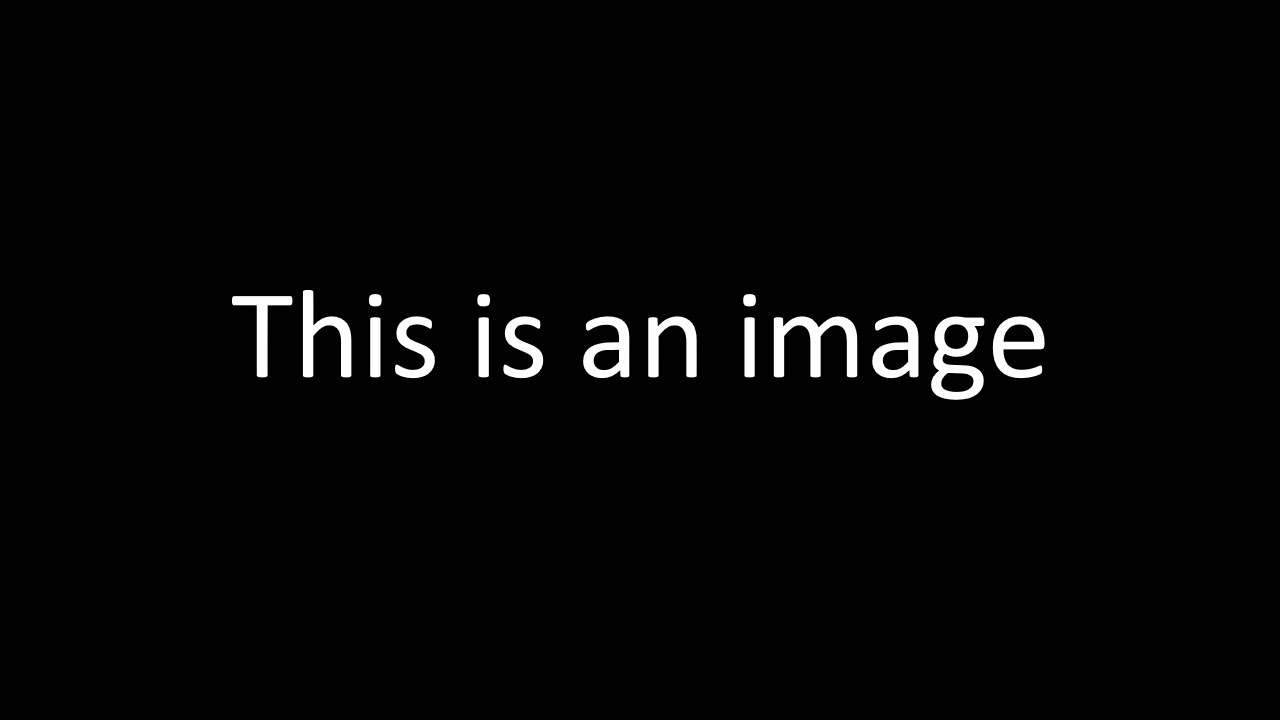


Figure 1. Add a caption explaining the image here.

# 2. Background

*Include a literature survey in the topic, discuss existing similar or relevant applications to yours and the result of a review of tools and techniques that are used to tackle projects similar to yours*.

## 2.1 Literature survey

*800 words*

*Describe initial results of a literature survey on a selected research topic or application area related to your project subject. Use relevant books, published research articles as well as Internet content for the purpose. Make use of in-text references to indicate your sources*.

## 2.2 Review of projects / applications

*800 words*

*Describe your background research on existing projects/software/applications, tools/frameworks/methods/algorithms/techniques relevant to your project, their advantages, and disadvantages. Use illustrations, diagrams, screenshots for the purpose.*

*You may produce a Table of Features in this section, comparing the main features of the above projects/software/applications and the one you developed.*

*A comparison table may also be provided to distinguish the key characteristics of features/methods/algorithms/techniques relevant to your project*.

## 2.3 Review of tools, frameworks and techniques

*800 words*

*Describe results of a survey on relevant tools/frameworks that can be used to develop applications such as the one you built for your project, such as programming languages and environments, libraries. List their advantages and disadvantages. Use illustrations, diagrams, screenshots for the purpose*.

# 3. Legal, social and ethical issues

*300 words*

*Consider any legal, ethical, social, professional and security issues associated with your research and the software/application you are building and/or the data you are collecting/analysing*.

# 4. Methodology

*800 Words*

*Describe the life cycle stages of the project, methodology, and development techniques you followed in the design and implementation of your project.*

*As examples: Gantt chart for life cycle, Waterfall or Agile for development methodology. Use an appropriate methodology for the project and list the key steps and milestones.*

*Discuss the implementation of your project and your consideration for UX, UI. Describe your testing methodology and give adequate examples, e.g., unit testing for typical client-server applications, white box for algorithmic and mission critical code etc. Discuss why your chosen methodology is suitable for the project.*

*Please note that even if you are using Agile methodology, you will still need to provide a high-level waterfall plan with key milestones, with any agile iterations also detailed in this report*.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Category 1 | Category 2 | Category 3 |
| Item 1 |  |  |  |
| Item 2 |  |  |  |
| Item 3 |  |  |  |

Table 1. Add caption here.

# 5. Design

*Describe your final software structure using diagrams where necessary.*

*800 Words*

*Discuss in some detail (if relevant) issues relating to:*

* *User Interface*
* *Infrastructure*
* *Functionality*
* *Algorithm development*
* *Content creation*
* *Other*

*Discuss how this address the project requirements.*

*Use appropriate design methods for your project and extend your design to include implementation details that were not included in your Project Specification Design and Prototype (PSPD) report. e.g. make use of UML such as class diagrams, sequence/activity/state diagrams for complex algorithms and workflows, use UI design methodology and heuristics for predominately UX based projects. If you intend to develop an app/software/dashboard, you may have to use/create ERD, flowcharting, storyboarding, prototyping. It is up to you to use the appropriate design that best describes your implementation*.

# 6. Tools and implementation

## 6.1 Tools

*300 words*

*Describe the tools (programming environments & languages, frameworks, and libraries,) you used for the development of your application. Justify your choices with references to your use cases or list of requirements.*

*State existing skills development and any new skills you employed for building your project*.

## 6.2 Implementation

2500 words

Explain implementation of main code by use case. Include pseudocode or snippets of any novel code. Highlight any code that is adopted/adapted and give the original sources. Make references to your design documentation where appropriate.

# 7. Testing

*Create sufficient test cases to determine that the applications satisfy the requirements and works correctly*.

## 7.1 Test coverage

*800 words*

*Discuss black box and/or white box testing against the requirements. Include specific test cases labelled by the relevant requirements*.

## 7.2 Test methodology

*800 words*

*Describe how the output was tested and why. Discuss how you obtained and used feedback, using expert or/and non-expert users*.

# 8. Conclusions and reflections

*1000 words*

*Provide critical reflections on ALL aspects of the project lifecycle. Include conclusions on the resulting application, research, and findings. Reflect on each aspect of your project life cycle. Critically evaluate how effectively your results meet your stated objectives. Reflect on strengths and weaknesses of your implementation, discuss the acquisition of any new knowledge and skills and consider further work*.

Character customisation,

Multiple camera point of view for user to select,

Watermarking and download feature.

3d objects upload for sculptures,

Expand the scene for more artwork to display,

Allow user to customise their scene to the specific type of artwork.

Allow multiple users into a single scene,

Proximity communication after user accepts.

Include galleries to allow multiple images upload simultaneously.

Machine learning to compare image against database and internet to confirm its unique.

Ai generated image detection.

# 9. References

*Include a list of cited in your text items (books, papers, websites, etc.). Use Harvard style for the purpose, or any other preferred standard referencing style*.

# 10. Bibliography

*Include here a list of general reading items (books, papers, websites, etc.). List the items in alphabetical order, using Harvard style to describe them*.

# Appendix I

*Provide additional material, if appropriate, in separate appendices.*

*Use one Appendix to provide a link to an on-line video demo of the project.*

*Do not include the entire code in print as an appendix.*