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| MTU Kerry |
| Final Year Project Appendix |
| Academic Year:2023/2024  Programme Title: Computing with Games Development – MT803  Module Title: Final Year Project  Module Code: PROJ 81003  Lecturer’s Name: Claire Horgan |

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# Risk Analysis

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| Risk Description | Impact (High, Med, Low) | Likelihood (High, Med, Low) | Prevention Activity | Plan of Action |  |
| Splatting Algorithm Complexity: As the Point cloud data gets more complex the rendering can slow down. | Medium | Medium | Optimize point cloud performance | Review rendering techniques in Unity and Unreal to optimize splat rendering. performance testing |  |
| Implementation Errors: Bugs during training and rendering can cause issues later in splat editing and rendering. | High | Medium | Thorough testing and debugging throughout point cloud training and rendering process. | Implement a testing framework to verify accurate training of splats. | Technical Risks |
| Compatibility Issues: The point cloud data and splat rendering may not integrate well with existing rendering techniques. | Medium | Medium | Ensure compatibility with existing 3D rendering technologies. | Perform integration testing early. |  |
| Data Quality: Poor quality image captures can lead to inaccurate point cloud data and inaccurate splat representation. | High | Medium | Use high-quality camera equipment to ensure best results later in the rendering and editing process. | Use high quality image capturing methods/ equipment. Verify captures early before the issues trickle down later in the development process. | Data Risks |
| Data Availability: Sourcing high quality and a variety of image captures may be difficult. | Medium | Medium | Source sufficient and relevant video footage/ image sets | Create a plan for capturing different image sets and video for the best variety of content. |  |
| Literature Gaps: Missing key findings in existing research may hinder quality of my research | Medium | Low | Conduct a comprehensive literature review. | Identify key findings and integrate them where applicable. | Research Risks |
| Innovative Methods: Utilising a relatively new method like gaussian splatting that is still evolving can lead to outdated findings. | High | Medium | Stay updated with latest research throughout project development | Regularly review emerging techniques and gaussian splat processes. |  |
| Time Constraints: There is a lot of research to do and processes to test to thoroughly investigate Gaussian Splatting. | High | High | Create a project timeline | Monitor progress and adjust timeline as needed to ensure project progress is on time. | Project Management Risks |
| Resource Availability: Will require access to a variety of software, literature and hardware. | High | Medium | Ensure access to necessary resources | Secure resources early and have backup options |  |
| Comparative Analysis: Ensuring any comparisons between Gaussian splatting and other photogrammetry methods are fair and accurate. | Medium | Low | Define clear comparison criteria. | Conduct thorough and fair comparisons | Validation Risks |
| Experimental Reproducibility: Ensuring my work done is reproduceable for myself and others. | Medium | Medium | Maintain detailed documentation of my methods. | Ensure methods are transparent and can be replicated. |  |
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# Initial Sprint Plan

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| Week | Activities & Estimates | Outputs |  | Status | Comments |
| 1 | Thinking of Project Idea. | Idea in my head for Final year Project | -1 Hour | Finished |  |
| 2 | Begin Write up of Project Plan. | Initial Ideas for Project documented. | -1 Hour | Finished |  |
| 3 | Complete Initial Project Plan. | Finished Initial Project Plan | -1 Hour | Finished | 1- Page |
| 4 | Complete draft of FYP with: Research Area, Research Question and begin Literature Review for Project. | Slides for interim Review, Draft DYP document | -3 Hours | Finished | 2-3 pages 2 slide PowerPoint |
| 5 | -Lit Review: Continue Working on.  -Outlining Future Lit Review Headings.  -Risk Analysis in Table format. | FYP document expanded, more headings for lit review, risk analysis table. | -5 Hours | Finished | 3-4 pages |
| 6 | Literature Review: Finalise key references and refine headings. Project Planning: Outline sprints for design and implementation phases. | Updated Literature Review section, Sprint Plan draft. | -6 Hours | Finished | Literature Review ~5 pages. Sprint Plan includes initial design goals. |
| 7 | Design Phase: Outline system architecture and tools to be used. Methodology: Draft core methodology section. | Drafted System Design document, Methodology section. | -5 Hours | Finished | Design and methodology sections ~3-4 pages total. |
| 8 | Interim Review Preparation: Compile slides and summarise progress. | Completed PowerPoint slides for interim review summary of progress. | -3 Hours | Finished | Presentation ~4-5 slides. Feedback received from supervisor. |
| 9 | Implementation Phase: Start working on Gaussian Splats. Import test data into Unity and experiment with settings. | For the initial Unity project setup, test data was imported. | -6 Hours | Finished | Successfully imported Gaussian Splats into Unity for first test. |
| 10 | Implementation Phase: Adjust Gaussian Splat quality settings and document findings. Testing: Compare FPS and file size differences for high vs low-quality settings. | Documented performance metrics and file size comparisons. | -8 Hours | Finished | Findings will be used in optimisation phase. |
| 11 | Further Literature Review: Incorporate new references, expand analysis of Gaussian Splat applications. Feedback Review: Address supervisor comments from the interim review. | Updated Literature Review, adjustments based on feedback. | -5 Hours | Finished | Literature Review ~7-8 pages. Updated project plan. |
| 12 | Implementation Phase: Begin merging Gaussian Splats and testing occlusion accuracy. | Merged initial Splats and documented visual results. | -6 Hours | Finished | Testing highlights areas for future optimisation. |
| 13 | Documentation: Draft the initial Implementation section. | First draft of Implementation chapter. | -4 Hours | Finished | Includes data capture and import process. |

# Jira Backlog

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## Sprint 1

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## Sprint 2

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## Sprint 3

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## Sprint 4

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## Sprint 6

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