THIS PAGE CAN BE DELETED FROM YOUR FINAL REPORT

(ALL text in blue can be deleted from your final submission)

T­he following guidelines **must** be adhered to:

**Writing Style**Your report should be written from a third person, observational perspective. Do not use the following terms:

|  |  |  |  |
| --- | --- | --- | --- |
| I  Me  My  Mine  We  I believe  In my opinion  According to me | Our  Us  Ours  Myself  We're  I feel  As I see it | I'm  Ourselves  We've  I know  As far as I'm concerned  I think  Personally | I have  I will  We can  Our experience  From my point of view  In my perspective |

Do use or model from the following examples which are written from an observational third person perspective:

|  |  |
| --- | --- |
| "The researcher" or "the observer"  "It was observed that..."  "The data suggest..."  "The experiment revealed..."  "The results show..."  "One can infer that..."  "The study indicates..."  "The findings imply..."  "The evidence supports..."  "An analysis of the data" | "The procedure was executed as follows..."  "The measurements were taken..."  "The subjects/participants behaved in a certain way..."  "The test conditions were controlled..."  "The trends in the data"  "The observations were made by the team."  "The process was documented as..."  "The phenomenon was recorded."  "A statistical analysis was conducted."  "The data were collected and analysed." |

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(ALL text in blue can be deleted from your final submission)

**Report Layout and Style**

T­he following guidelines **must** be adhered to:

* All **text will be black** in the report unless in very exceptional circumstance.
* Main body text must be at least **11pt font** using either **Arial or Calibri** font.
* Main body text will have **1.5 line spacing**.
* **Margins** will be a minimum of **2 cm on each side**.
* All **pages** will be **numbered consecutively**.
* Start **each section on a new page**.
* **Figures** must have **captions** and be **numbered** (e.g., Figure 1).
* **Tables** must have **captions** and be **numbered** (e.g., Table 1).
* **Figures** may be **black and white**, or **colour**.

**Word Count**

* There is a **10,000-word limit** for the project. This is a maximum, not a target. Shorter is often better.
* All words in the main body, excluding words in figures and tables, will be included in the word count.
* Consider what can be removed from the main body and placed in an appendix to reduce the word count as not every detail may be necessary in the main document.

**Copyright and Intellectual Property Rights (IPR)**

Your report should be written considering that it will be within the public domain. Normally, you retain copyright over your written work and Intellectual Property Rights (IPR) over any technical work. There are rare situations where this might not be as simple, for example when working with a company, external client, or on a larger university project. There are strategies you can utilise:

* You can inform your supervisory team that the project cannot be made available to other students undertaking an MSc Project.
* You can provide a shortened report for sharing that does not contain the protected information.
* You can assign IPR to the external collaborator, although you should take great care when doing so. It is best to speak to your supervisor.
* Non-disclosure agreements can be made between the external collaborator and the supervision team.

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Summary of the project sections

1. **Introduction – setting the scene.**
   1. Problem statement.
   2. Aims and objectives.
   3. Motivation/background.
   4. Legal
   5. Social
   6. Ethical
   7. Professional
   8. Report outline.
2. **Literature - Technology review –** a thorough investigation of the problem background and options for solving it.
3. **Methodology –** Given the findings of the previous sections, which methods and approaches may be suitable for your problem, and which one will you choose?
4. **Implementation –** How was methodology described in the previous section applied in order to solve your specific problem? i.e. A description of what you did.
5. **Results –** What is the final outcome of results the of your implementation and evaluation?   
     
   **Evaluation –** How was your implementation validated? Described the steps that you took to evaluate the extent to which your implementation has met the aims of the project.   
     
   **Work of Others** - How do your results and evaluation compare to the work of others?
6. **Conclusion –** a summary of your main findings, a personal reflection and proposal for future work.
7. **References**
8. **Appendices**

Emergent Dialogue and Quest Generation using LLMs

By

Rezwan Rahman (RAH22529097)

Submitted to

**The University of Roehampton**

In partial fulfilment of the requirements

for the degree of

**BACHELOR OF SCIENCE IN COMPUTING**

**Date:** 19/12/2024

Signed (apply signature below)

**Rezwan Rahman**

**Declaration**

I hereby certify that this report constitutes my own work, that where the language of others is used, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of others.

I declare that this report describes the original work that has not been previously presented for the award of any other degree of any other institution.

Acknowledgements

Here it is customary to thank the people who have supported this work and your studies in general. It is up to you who you thank!

Abstract

GUIDANCE: Up to 300 words

A short summary of your project to include the problem, the main literature reviewed, your implementation and your findings.

Write this after you have finished the entire report!

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# **Introduction**

GUIDANCE: Up to 1000 words  
An initial paragraph introducing the project context and idea.

## Problem Description, Context and Motivation

Your research question or problem statement should include the following considerations:

* What is the problem you are addressing?
* Who is affected by the problem?
* Where and/or when does the problem occur?
* Why is it important to solve the problem?

Problem Description

Context

Motivation

* The problem I’m trying to solve

## Aims

Aims are broad statements of desired outcomes and intentions. We expect about 3.

Enhance and Evolve Player Immersion through Dynamic Content Creation inside Games.

Innovate Game Development with AI Integration

Contribute to the Evolution of Interactive Storytelling

## Objectives

Objectives are the tangible steps that will be taken to achieve the aims i.e., tasks that will be done.

Design and Develop the RPG Framework.

Integrate the AI Language Models into the Framework.

Develop Content Moderation and Context Management.

Evaluate Player Experience and System Performance

Document the Development Process

## Legal

All projects will have legal considerations. You are marked on your ability to identify them and take any actions necessary.

## Social

All projects will have social considerations. You are marked on your ability to identify them and take any actions necessary.

## Ethical

All projects will have ethical considerations. You are marked on your ability to identify them and take any actions necessary.

## Professional

All projects will have professional considerations. You are marked on your ability to identify them and take any actions necessary.

Consider the issues that your project has under each heading. Discuss with your supervisor if you are not sure. If your project required ethical clearance, then this must be clearly stated in this section, including how the ethical considerations were managed.

## Background

Provide the reader with the relevant contextual information necessary to understand why your work is important. You may reference literature here and/or your personal motivation. You should describe the context of your work (for example if it is relevant to a particular area of business, medicine, education etc) and how it addresses known issues in that context. This section is expected to have at least some references to external sources.

## Report overview

Describe the upcoming sections in order -- this provides your reader with a roadmap of the report.

**Refer to the Project Report Builder on Moodle for content that you should include in this section.**

# **Literature - Technology Review**

GUIDANCE: Up to 1500 words

**Note:** All projects will require a technology review. However, not all projects will require a literature review. Please speak to your supervisor to confirm what is required for your project.

## Literature Review

The literature review is a key part of your project and has specific marking criteria attached. The purpose of the literature review is to show that you have researched, understood, and evaluated all aspects of your problem statement. This is your ‘investigation’.

You should describe the problem in detail, mentioning any organisations, institutions or individuals who are important in the context or the solution.

You should correctly reference key articles, books, or papers you have read that are relevant to the problem.

It is not enough to list relevant points. You also need to show the ability to:

* Summarise the main points.
* Discuss (e.g., point out strengths, weaknesses, differences of approach etc).
* Describe how the literature you have found relates to the problem you are addressing.
* Apply your own critical thinking to the material you include.
* Draw your own conclusions from your investigation and show how these will guide your methodology and implementation.

Everything that you write in your literature review must be clearly relevant to your problem statement and aims and objectives, and you must clearly state this.

Papers:

Generative Agents: Interactive Simulacra of Human Behaviour

MemoRAG: Moving towards Next-Gen RAG Via Memory-Inspired Knowledge Discovery

### Introduction

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### Background and Context

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### Analysis of Generative Agents

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### Analysis of MemoRAG

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### Comparative Discussion

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### Relevance to the Project

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### Critical Gaps and Opportunities

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## Technology Review

The technology review focuses on technology that will be and could be used for the project. Firstly, you should review and summarise different technology options you could apply to your project. Then, you should write down the rationale for your own choice.

### Game Engine

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#### Godot (GDScript)

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#### Unreal Engine (Blueprint)

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### Programming Language

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#### Rust

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#### C++

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### LLM Technologies

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#### Ollama

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#### LangChain

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#### HuggingFace

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### Version Control and Collaboration Tools

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#### Git

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#### GitHub

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### Journalling and Knowledge Base

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#### GitHub Wiki

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#### Obsidian

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## Summary of Outcomes of Literature and Technology Review

Include two tables:

* A table that summarises the benefits and limitations of the literature that has been reviewed.
* A table that summarises the benefits and limitations of the technologies that have been reviewed.

Critically analyse the content in each table and identify how the outcomes of your critical analysis will influence your methodology and your project overall.

**Refer to the Project Report Builder on Moodle for content that you should include in this section.**

|  |  |  |
| --- | --- | --- |
| **Paper** | Benefits | Limitations |
| Generative Agents: Interactive Simulacra of Human Behaviour |  |  |
| MemoRAG: Moving towards Next-Gen RAG Via Memory-Inspired Knowledge Discovery |  |  |

|  |  |  |
| --- | --- | --- |
| **Technology** | Benefits | Limitations |
| Godot |  |  |
| Unreal Engine |  |  |
| Rust |  |  |
| C++ |  |  |
| Ollama |  |  |
| LangChain |  |  |
| HuggingFace |  |  |
| Git |  |  |
| GitHub |  |  |
| GitHub Wiki |  |  |
| Obsidian |  |  |

# **Methodology**

GUIDANCE: Up to 1000 words

This section should answer the question -- **how are you going to undertake the project?**

Describe HOW you are going to create your artefact, including any tools, design methods, data gathering methods, algorithms etc that you are going to use. Tell us WHY you have chosen these methods in favour of others (with reference to the findings of your literature and technology review).

This section should include the following subheadings:

* Design
* Testing and Evaluation
* Project Management
* Technologies and Processes

**Refer to the Project Report Builder on Moodle for content that you should include in this section.**

### Design and Methodology

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Iterative DesignEtiam rutrum laoreet imperdiet. Morbi quam enim, varius id efficitur sit amet, tempor vel sem. Donec dictum feugiat tortor id malesuada. Nullam fermentum ex in eros tincidunt faucibus. Curabitur egestas, dolor sed suscipit tincidunt, nibh nibh egestas dui, in luctus nibh mauris eget ligula. Etiam placerat diam magna, et feugiat felis ultricies nec. Pellentesque gravida accumsan hendrerit. Cras lorem diam, ornare eu leo fermentum, semper hendrerit neque. Integer suscipit, eros luctus interdum interdum, ex urna lobortis dui, id facilisis orci magna eget dolor.

### Design and Methodology

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#### Iterative Design

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### Testing and Evaluation

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#### Rust Test Cases

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#### GDUnit Test

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### Project Management

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#### GitHub Projects

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### Technologies and Processes

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#### Godot

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#### GDScript

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#### Ollama

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#### Git

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#### GitHub

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# **Implementation**

GUIDANCE: Up to 3000 words

Finally, you can tell us WHAT you did, i.e. How did you apply the methodologies you have described in the section above to your actual problem.

This part can be very descriptive but please avoid excessive detail.

Some strategies that can help you write this part:

* Choose a writing style (e.g., first, second, or third-person perspective).
* Start this section with any design work you might have done e.g., System design/architecture, UX design artefacts etc.
* If you divided your work into sprints, that can be a good structure for this section.
* Only include code snippets for particularly challenging parts of your implementation.
* Pick out a few difficult problems you had to solve and tell us in detail how you solved them. This brings your experience to life.

**Refer to the Project Report Builder on Moodle for content that you should include in this section.**

# **Evaluation and Results**

GUIDANCE: Up to 2000 words

This is an important section where you weigh up the strengths and weaknesses of your artefact.

Guidance: If your project has a user-facing element, we expect to see some kind of evaluation of this with representative intended users, for example a ‘think aloud’ usability test.

You can also apply standard metrics for the domain you are working in and see how you have done against them. **Your project does not have to be perfect -- indeed the outcomes might have been bad.** The point is you must evaluate the outcome and discuss its strengths and weaknesses.

This section should include the following subheadings:

* Related Work

**Refer to the Project Report Builder on Moodle for content that you should include in this section.**

# **Conclusion**

GUIDANCE: Up to 1500 words

The conclusion summarises the project. Start by summarising the overall outcome of your project and to what extent the aims and objectives have been met. You need to highlight your key outputs and/or discoveries.

The following subsections that must appear in your conclusion.

## Future Work

Answer the question -- **What next?**

You've completed a significant piece of work -- perhaps the largest piece of work you have ever done. But no project is ever 100% complete, and you will have found new ideas along the way. If someone were to pick up your project, what avenues should be explored next?

This is an important section, and it helps us understand what you have learned by doing the project and allows you to show you understand what a more ideal solution might look like, outside the constraints of the MSc Project timeframe.

## Reflection

You must critically reflect on the entire project process and how well you have worked on the project. What particular things have you learned during the project? Why were you able and unable to meet project goals? What would have you done differently in hindsight?

**Refer to the Project Report Builder on Moodle for content that you should include in this section.**

# **References**

In this section, you **must** reference any sources used in your work. Typically, these sources will have come up during the investigation and related work sections. Your referencing must use the IEEE referencing style [IEEE Citation Guidelines2.doc (ieee-dataport.org)](https://ieee-dataport.org/sites/default/files/analysis/27/IEEE%20Citation%20Guidelines.pdf) .

It is **highly** recommended that you use reference management software such as RefWorks that is provided by the university. Your project should have as many references as is required. However, having few references indicates that no thorough investigation has occurred.

It is your responsibility to ensure that you have actually read all the material you reference, and that the references provided in your report are legitimate and **NOT AI generated**.

[1] J. Park *et al.*, “Generative Agents: Interactive Simulacra of Human Behavior,” vol. 23, 2023, doi: https://doi.org/10.1145/3586183.3606763.

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[5] J. Martins, “What Are KPIs? • Asana,” *Asana*, Mar. 01, 2024. https://asana.com/resources/key-performance-indicator-kpi

[6] J. Martins, “Write Better SMART Goals - Tips with Examples,” *Asana*, Feb. 03, 2024. https://asana.com/resources/smart-goals

[7] A. Web Services, “What Is LangChain? - LangChain Explained - AWS,” *Amazon Web Services, Inc.* https://aws.amazon.com/what-is/langchain/

[8] R. Scarborough, “Writing Quality Code: Practicing ‘Make It Work, Make It Right, Make It Fast,’” *Keyhole Software*, Mar. 23, 2023. https://keyholesoftware.com/writing-quality-code-practicing-make-it-work-make-it-right-make-it-fast/

[9] H. Qian, P. Zhang, Z. Liu, K. Mao, and Z. Dou, “MemoRAG: Moving towards Next-Gen RAG Via Memory-Inspired Knowledge Discovery,” *arXiv.org*, 2024. https://arxiv.org/abs/2409.05591

[10] Wikipedia Contributors, “Test-driven development,” *Wikipedia*, Oct. 24, 2018. https://en.wikipedia.org/wiki/Test-driven\_development

# **Appendices**

Appendices appear after references. Your appendices depend on the nature of your project. **Do not assume people will read your appendices.** Even if you direct them to do so in your main text, appendices are considered additional information and should not be relied upon to understand your main body of work. Refer readers to an appendix using a phrase such as *see Appendix A for further details*.

The following documents **must** be included as references:

* Your Project Proposal.
* Evidence of your use of a project management tool.
* A description of how to access any technical output. **It is strongly recommended you use GitHub or something similar to do this.**

Any important communications between you and external stakeholders -- **please ensure private data is removed and communications anonymised.**