**CMP6200/DIG6200**

**Individual Undergraduate Project (FYP)**

**Project Interim Report**

**[Project Title Here]**

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**Course: Computer Games Technology**

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**Date:** [Date of Submission]

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# Introduction and Context

Procedural content generation (PCG) has become a defining feature in modern game development, allowing developers to produce expansive and varied environments automatically through algorithms instead of manual design (Togelius et al., 2011). While this approach offers scalability and replayability, it also poses challenges to the behaviour of artificial intelligence (AI) in procedurally generated games as they are often unable to fully exploit these uniquely generated levels or environments (Jutesen et al., 2018). Because of this games that utilise procedural generation often lead to enemy AI or non-playable characters (NPCs) using basic routines for their behaviour such as idle, attack and chase.

## 1.1 Problem Statement

AI within PCG currently relies on pre-determined behaviour, which prevents them from making intelligent decisions within the environment (Pereira, Viana & Toledo, 2021). This limits adaptability and promotes predictability which highlights the need for an algorithm that receive and adapt to real-time information about PCG levels and adjust its behaviour accordingly (Khalifa et al., 2020).

**2.0 Review of Existing Knowledge**

Comprehensively outline and expand on the primary concepts and established models presented in studies relevant to your problem statement. What is the existing knowledge on this subject? What are the main findings and conclusions derived from these studies? This should not merely be a descriptive summary; rather, a critical analysis of the information to construct a coherent narrative regarding the current state of knowledge.

**Note***: The review of concepts could be broken down into further sub-sections depending on the themes relevant to your topic that you identify during the review.*

**2.1 Critical Analysis and Gap Identification**

During this phase, you carry out a critical reflection of the sources you have examined, identifying their limitations, contradictions, or disagreements within the literature. Establish which questions remain unanswered. This critical scrutiny should help you pinpoint a specific "gap”; whether it is an unresolved issue, an underexplored area, a new perspective that has not been considered, or a practical solution that is missing from existing studies.

**2.2 Project Justification**

Building on the identified gap in section 2.1, clearly explain how your project will fill the identified gap. This is where you can outline your question, hypothesis or proposed solution. Specifically link your project idea to the shortcomings or unanswered questions in existing studies. It would add value if considerations are given to how the project would be relevant to your industry, e.g., the benefits of using an AI-based prediction model by financial advisors in the stock exchange. This section confirms that your project is not only attractive but also crucial and relevant.

**3.0 Project Aims, Objectives, and Scope**

This section converts your identified problem into a straightforward plan of action. It outlines what you aim to accomplish and the specific steps you will follow to reach it.

**3.1 Project Aim**

Summarise the main goal of your project clearly in one concise sentence. This should act as a full statement of what you aim to achieve by the end of the project. For example: "The aim of this project is to create and assess a cost-effective cybersecurity framework tailored for small to medium-sized enterprises."

**3.2 Project Objectives**

Set out 4-6 specific objectives that break down the project aim into smaller tasks, that are: Specific, Measurable, Achievable, Relevant and Time-bound (SMART).

* **Objective 1:** *[State your first SMART objective]*
* **Objective 2:** *[State your second SMART objective]*
* **Objective 3:** *[State your third SMART objective]*
* **Objective 4:** *[State your fourth SMART objective]*
* **Objective 5:** *[State your fifth SMART objective]*
* **Objective 6 (Optional):** *[State your sixth SMART objective]*

**3.3 Project Scope**

Clearly define the project's boundaries. What will it include, and just as importantly, what will it exclude? This helps manage expectations and keeps the project on track. For instance: "This project will concentrate on preventative cybersecurity measures and will not cover incident response protocols."

**4.0 Project Design**

This section outlines the practical steps, methods, tools, and schedule you will follow for your project, covering the 'how' aspect.

**4.1 Design and Methods**

Outline the overall approach you plan to take. For example, will your project involve an experiment, survey, case study, development, film-making or literature-based analysis? If so, what kind of data/information do you need? Detail the specific methods and techniques you will use to achieve each objective, such as qualitative interviews, statistical analysis, user-centred design, etc.

**Note:** *Considering the diverse availability of methods and design approaches, it is strongly recommended that discussions be made with the main supervisor to align the choice of project design with your chosen topic.*

**4.2 Justification of Methods**

Justify your selection of these methods, explaining why they are the best fit for addressing your needs and meeting your project objectives. Briefly compare them to other methods and defend your decision.

**4.3 Project Timeline**

Create a realistic project schedule. A Gantt chart is the best way to visualise this. The chart should cover all major tasks (e.g., literature review, data collection, development, analysis, writing), key milestones, and their deadlines from start to finish.

**5.0 Feasibility, Risks, and Ethical Aspects**

This final section shows that you have considered your project's execution in a practical and responsible way.

**5.1 Feasibility**

Evaluate how realistic and achievable your project is. Think about the resources you have available, including time, access to necessary data, software or equipment, and your own skills. Give a brief explanation for why you are confident the project can be completed successfully within these constraints.

**5.2 Risk Analysis and Mitigation**

Identify at least 3-4 potential risks that could threaten your project's success. For each risk, suggest a practical mitigation strategy to minimise its impact. The table below shows how you can present this in an effective way.

|  |  |  |  |
| --- | --- | --- | --- |
| Potential Risk | Likelihood (Low/Med/High) | Impact (Low/Med/High) | Mitigation Strategy |
| e.g., Delay in receiving access to required datasets | *Medium* | *High* | *e.g., Identify alternative open-source datasets in parallel; start work on other objectives.* |
| e.g., A key software tool has a steep learning curve | *High* | *Medium* | *e.g., Allocate specific time in the project plan for tutorials; seek guidance from supervisor.* |
| e.g., Difficulty recruiting participants for interviews | *Medium* | *High* | *e.g., Start recruitment early; use multiple recruitment channels; have a backup plan.* |

Table 4.1: Risk Assessment and Mitigation

**5.3 Ethical Considerations**

Reflect on the ethical aspects of your project. If working with human participants, how will you secure informed consent, ensure anonymity, and maintain confidentiality of their data? If utilising datasets, are there any concerns regarding data protection? Consider the potential social influence of your project's outcome. Clarify the steps you will take to conduct your project ethically and responsibly.

**References**

List all the academic and professional sources you have cited in your report, formatted in accordance with the Harvard Referencing Style.

**Appendices (Optional)**

Include any additional material here, such as review steps, specifications, and methodologies.