Artificial Intelligence for Games – Project Research Workbook

This workbook will help you focus your research for your project.  
Once you have answered these questions, use this information in your Technical Design Document.

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| Briefly describe the application, game or simulation you are researching.  (This is your initial idea to focus your research. The application described in your design documents or your final build may end up being different from this description) |
| The game example I am looking at is a project that Jason Weimann made on one of his live streams. (https://www.youtube.com/watch?v=ytVhYlSoF9c)  It is essentially a zombie infection game where humans and zombies are represented with a different colour circle. This can be changed later if needed.  When a zombie touches a human, that human has a chance of turning infected.  Humans must try their best to avoid the zombies.  Barricades will be a mechanic which humans will try to hide behind in order to delay the zombies.  Barricades can be destroyed by zombies depending on the health stat of the barricade.  If time is left, then humans that can shoot will probably be implemented. This will give the humans a chance to survive. |

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| What pathfinding algorithm will you implement.  List some (at least one) online or class resources that will assist you in implementing this algorithm.  Examples may include YouTube videos, blogs, textbooks, or class resources |
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| Describe how this pathfinding algorithm will be used by the agents in your application.  For example,   * Will the player-controlled character find a path to the last click? * Will AI agents follow a target? * Will the destination be updated dynamically (if so, at what interval), or only when the agent reaches its current destination   Reflect on (and describe here) how these choices influence the design and development of your application. |
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| What AI strategies could be used. (For example, state-machines, blackboards, decision trees, etc)  Pick two strategies and list a brief description of how they work, along with some resources that could assist you in implementing these strategies. (Examples may include YouTube videos, blogs, textbooks, or class resources) |
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| What is a Technical Design Document, and why is it useful?  List the major topics or points of discussion (at least 5) commonly included in technical design documents. |
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| List the libraries, APIs, algorithms, or assets (i.e., any pre-existing component) that you will use, or might consider using, when implementing your application.  For each component, include a brief statement listing it’s functionality, suitability, and technical impact on the project. |
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| What are the licensing arrangements or restrictions for the pre-existing components you have identified?  (Identify the licence of each component) |
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| Identify a possible audience for your application, game or simulation.  What platform(s) are you targeting? |
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| Describe the real-world environment you will be simulating.  Dscribe any real-world aspects that are present in the game world, and how their real-world behaviour will influence your simulation.  For example, does your program have animals that will head towards water when thirsty? Or, will you implement prison guards that head towards the source of a noise? |
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| Try to describe the complexity of your project.  For example,   * How complex are the AI behaviours you have chosen? * How many classes are needed to simulate all your entities? * How deep is the inheritance hierarchy? * Which algorithms are the most complex or difficult to implement? |
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| Identify any tools that may help you in your implementation.  For example, graphical applications for asset development, debuggers or IDEs. |
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| List any other additional information that may aid in the design of your project. |
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