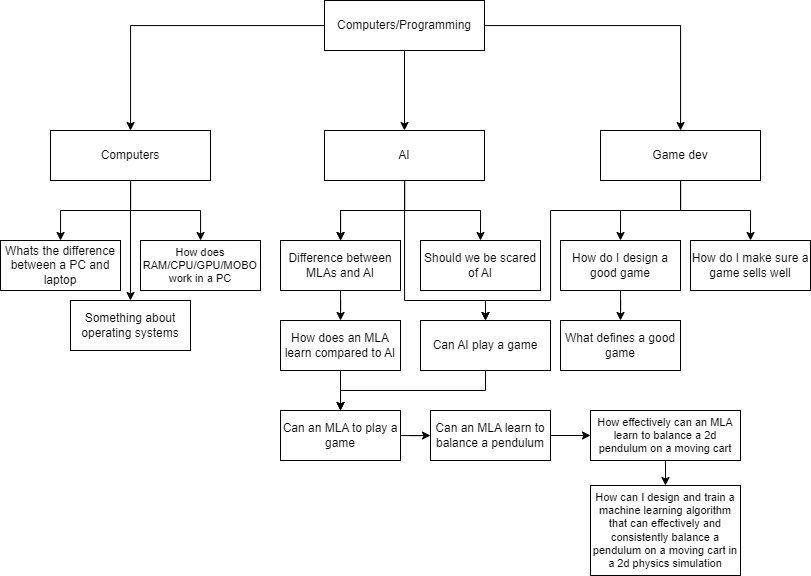
![A white background with black dots

Description automatically generated](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAE0AAABOCAYAAABlnZseAAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAAAJcEhZcwAADsMAAA7DAcdvqGQAAAC7SURBVHhe7dCxAYAwDMCwlP9/hg48EM/S4t3nvYaV5y8LpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpq3NfDrYBJgn4mvoAAAAAElFTkSuQmCC)![A white background with black dots

Description automatically generated](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAE0AAABOCAYAAABlnZseAAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAAAJcEhZcwAADsMAAA7DAcdvqGQAAAC7SURBVHhe7dCxAYAwDMCwlP9/hg48EM/S4t3nvYaV5y8LpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpgWmBaYFpq3NfDrYBJgn4mvoAAAAAElFTkSuQmCC)When deciding on a topic for my research project, I had 3 general topics that I wanted to investigate. These were computers, AI and game design. I had decided on these because I am very interested in all 3, and have been interested in most of them since a young age.

**Figure 1** – Thinking process and question development mindmap.

Recently with the AI boom, I was inspired to look deeper into AI and similar digital structures. I ended up developing more questions in the AI branch than any others (*figure 1*). However, I incorporated game development into some of my AI questions which helped guide me to my final question.

Ultimately, I believe it was a good idea to not follow into computers or game development as computers would be either very simple (Whats the difference between a PC and laptop) or very in depth and would take far longer to make (How does an OS work). It’s a similar story for game development, as designing a “good game” is not a simple answer, no matter how specific the question is. Making sure a game sells well is also something that cannot be completed in the given time frame for the research project, as it would likely take atleast 12 months of analysis to be worthwile. (*figure 2*).

|  |  |  |
| --- | --- | --- |
| General Topic | Strengths | Weaknesses |
| Computers | * Wide range of topics * Career applicable knowledge | * Most options are either too easy or too hard to answer in a research project |
| AI | * Developing field of science * Applicable in other fields of knowledge | * Computer resource intensive * Technical knowledge barrier |
| Game development and design | * Largest interest of mine * Most creative options | * Timeframe is too large for RP * Games are difficult to develop |
| **Figure 2** – Table consisting of strengths and weaknesses of general research topics | | |

|  |  |  |
| --- | --- | --- |
| Questions | Strengths | Weaknesses |
| Should we be scared of AI | * Can give me a properly informed answer for whenever I am asked | * Hard to answer * Answer could be different in 2 years time |
| Differences between MLAs and AIs | * Helps me identify what I should use for each application in the real world | * Likely wont be able to demonstrate any differences, just theorise * Very close ended, would likely be more suited to a dot pointed single page |
| Can AIs learn to play games | * Open ended * Has potential entertainment value if findings are posted on YouTube or similar sites | * Requires running an MLA over some time (very time and computer resource intensive) * Very difficult to answer * Potentially too open ended |
| **How does an MLA learn to balance a pendulum** | * Specific * Gives me knowledge to apply in other applications | * Needs a physics simulation * Requires running an MLA over some times |
| **Figure 3\*** – Table consisting of strengths and weaknesses of research question options  \*Questions are not in final form, and are all very broad | | |

An interest in AI for me is the area of Machine Learning Algorithms (MLAs), which arent technically AI, but instead are closer to complex mathematical functions that turn some input values into output values.

Learning how to apply MLAs has become a recent specific interest in mine, but they can be very indepth, and it can be difficult to apply them succesfully to have the intended result. Because of this, I have decided to to learn how to apply an MLA to a simple physics simulation and analyse its “learning” to figure out the best way to train an MLA for a specific use case.

Capabilities

What Capability/ies have you chosen?

What are the specific skills and knowledge you are hoping to develop by focusing on this Capability? Refer to the dot point in lesson 2

How are they going to be developed over the Research? Provide specific examples and instances.

Research Outcome

Who is your audience?

How will you present your research?

Why will this suit your topic and audience?