

Computer Games Development CW208

Software Functional Specification

Year IV

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| [Date of Submission] | |

[Declaration form to be attached]

Contents

[Acknowledgements](#_heading=h.l9ckjdn52ht6) **2**

[Functional Specification](#_heading=h.30j0zll) **3**

[References](#_heading=h.3znysh7) **3**

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John Doe of ACME who kindly agreed to …

I would also like to thank #### Solutions for use of ….

# Functional Specification

The major functionalities of the software will be the game itself, the AI and its training mechanisms, as well as player interaction for the Backpropagation training mechanism.

To be more specific, the game itself will be a slice of a very simplified version of Mega Man 3; making use of the popular games control scheme should allow the AI a sufficient number of choices to make at any given time. The game will make use of sprites from Mega Man, as well as its HUD; I will be using a health bar. For the sake of simplicity, Mega man will only have his basic attack. Movement will consist of running left or right, jumping and a slide. This movement system should allow me to create sufficient obstacles for the AI to navigate. I will also be making use of some basic enemies from Mega Man 3 as further obstacles for the AI.

Speaking of the AI, it will be playing through the game using two training mechanisms; Reinforcement Learning and Backpropagation. In the case of Backpropagation, in order to gather the data necessary for the AI, the game will have functionality in place for the user to play through the game, their inputs being saved as they play. These inputs are then given to the AI. Once the data has been gathered, I will have the AI play through the game several times using each training method. Once the AI has gone through several cycles of play, at the end I will compare how the AI performed. I plan to use Tensorboard to display the information gained by both training mechanisms such as success rate, learning rate, etc. and compare the results.

As I implied earlier, the software will be written in Python, using the Tensorflow library.

# References

**Book**

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