

List of Figures

2.1	Example image from the game Longcat.	5
2.2	Example of a Puzzle-Up generation method for a maze game.	6
2.3	Example of a Solution-Down generation method for a maze game.	6
3.1	Level 2 of Longcat (left) and its solution graph (right)	10
3.2	Level 2 in a dead state.	11
3.3	Average completion time for all 250 levels in Longcat.	13
3.4	Player distribution over all 250 levels in Longcat.	14
3.5	Level 37 graph representation.	15
3.6	Extracted variables plotted to the average solution time for all 250 levels	16
3.7	Extracted variables plotted to the average solution time for all 250 levels	17
4.1	Generated level with a long tunnel.	20
5.1	Diagram of the convolutional DQN architecture.	25
5.2	Difficulty distribution for unique solvable levels generated by the Puzzle-Up random generator	27
5.3	Three levels of varying difficulty sampled from the ones generated by the Puzzle-Up random generator.	28
5.4	Difficulty distribution for unique solvable levels generated by the Solution-Down random generator. The y-axis is logarithmic.	29
5.5	Three levels of varying difficulty sampled from the ones generated by the Solution-Down random generator.	30
5.6	Number of duplicates for each temperature of generation by the SD-PCGRL generator	31
5.7	Number of duplicates for each temperature of generation by the SD-PCGRL generator	32
5.8	Number of levels generated by the SD-PCGRL using all temperatures, for various difficulty spans.	33
5.9	Three levels of varying difficulty sampled from the ones generated by the SD-PCGRL generator with temperature 0.3.	34
6.1	Three levels of varying difficulty in the span 0 to 20 sampled from the ones generated by the solution-down random generator.	43
6.2	Number of non-trivial unique levels generated by the SD-PCGRL generator at each temperature.	44