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| Student Name: | Aaron O’Dea | | Student Number: | C00217820 |
| Working Title: | Using a Genetic Algorithm to Create Adaptive AI NPC’s using generation cycles. | | | |
| Description: | For my study, I want to determine how NPCs will survive in a world based on their statistics and traits.  To perform this test I want to place a randomly generated group of NPCs in a pre-constructed environment and add in pre-constructed events at predetermined intervals which will affect the population(Plague, Animal Attacks, Natural Disasters)  The starting NPC generation will have randomised Statistics(Health, Age, Speed, Size, Strength) and traits(armour, attraction to a certain statistic, dislike of a certain statistic, children per cycle, reproductive cooldown).  The user will have zero interaction with the NPCs after the initial set up of global statistics(Population starting Size, Dominant Statics/Trait, Non-Dominant statistics/Trait, reproduction age, Average lifespan).  The NPCs Statistics Should also be changed based on the Parent NPCs  E.G If the parents both have the same dominant Statistic/Trait it is more likely for the child to carry that Statistic/Trait On.  The Inherited Statistic/Trait should also have a random chance of decreasing/increasing.  For the outcome of this study, I want to determine if there is an optimal arrangement of statistics and traits to provide.  A. The longest lifespan for the NPCs in their environment.  B. The largest population possible.  C. The longest possible lifespan of an individual NPC. | | | |
| Reasons for selecting project: | | I want to see if it is possible to create a more Realistic NPC group which could possibly be used to enhance a players experience in RTS Game | | |
| Proposed research content: | |  | | |
| External links (if applicable): | | <https://towardsdatascience.com/introduction-to-genetic-algorithms-including-example-code-e396e98d8bf3>  <http://www.dmi.unict.it/mpavone/nc-cs/materiale/NSGA-II.pdf>  <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.44.5416&rep=rep1&type=pdf>  <https://www.researchgate.net/publication/321724273_Monsters_of_Darwin_a_strategic_game_based_on_Artificial_Intelligence_and_Genetic_Algorithms> | | |
| Hardware requirements: | |  | | |
| Software requirements: | |  | | |
| Other requirements: | |  | | |

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| Signed: | | Date: |
| **For Office Use Only** | | |
| Approved/Not  Approved: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| Reasons for not approving project: |  | |
| Conditions attached to approving project: |  | |
| Approved/Not Approved: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| Name of Supervisor: |  | |
| Signed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |