**Student Name**

Lewis Wilden

**Proposed Final Project Title**

Creating Guard AI Suitable For A Stealth Game

**Development Blog URL**

https://guardaiproject.wordpress.com/

**Brief Outline of Work**

This project is an exploration and creation of an Artificial Intelligence suitable for a guard within a stealth based game. The essence is to create a set of rules for the guard so it can patrol, detect, chase and attack the player character. I will also create a gameplay scenario to play-test the implemented algorithm and change any elements that seem unnecessary or add elements that are needed.

This project will be based in the Unity3D engine using the C# programming language, the reasoning behind this is I have more experience with the Unity engine and more confident with C# than other languages.

The following areas of research will be vital to this project:

Finite State Machines: The FMS will handle the decision making for the guard, researching the methods for creating FMS and the ways to change the states at the correct time is crucial. Having the guard start in an idle/patrol state and changing to Aware state if it notices something out of place e.g. open door, then moving to Alert state if the player is seen or heard.

Pathfinding: Creating a method for the guard so it can follow a patrol system and chase the player if caught. Also, how will the guard react to walls/objects, jumping or climbing up/down walls. If the player is heard how will the guard know what direction it is coming from and what the optimal path is.

Mechanics: Current mechanics in stealth based games,

**Rationale For The Project**

The reasoning for undertaking this project is programming interest me academically, professionally and personally. Also, Artificial intelligence is an area that I haven’t explored yet

**Annotated Bibliography**

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|  | **Bibliographical item** | **Summary** |
|  | Basilico, N., Gatti, N. and Amigoni, F. (2012).  Patrolling security games: Definition and algorithms  for solving large instances with single patroller and single intruder.  *Artificial Intelligence*, [online] 184-185, pp.78-123.  Available at: https://pdfs.semanticscholar.org  /2041/0e7ac4b93797e5fd705fd32b5910601f9fad.pdf  [Accessed 1 Oct. 2017]. | This article discusses the optimal ways of implementing a single patroller (guard in my case) and a single intruder (The Player) in a patrolling security game. |
|  | Buckland, M. (2009). *Programming game AI by example*. Plano, Texas: Wordware Publ. | This book discusses the practical way of creating an AI algorithm. The book contains pseudo code which allows for easy translation depending on the programming language of your choice |
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| **Use this grid to plan your project milestones** | | |
| **2017 – 18** | **Week #** | **Milestone Deliverables and Tasks** |
| 25 – 29 Sept | Week 1 |  |
| 2 – 6 Oct | Week 2 |  |
| 9 – 13 Oct | Week 3 |  |
| 16 – 20 Oct | Week 4 |  |
| 23 – 27 Oct | Week 5 |  |
| 30 Oct – 3 Nov | Week 6 |  |
| 6 – 10 Nov | Week 7 | Submission of Final Project Proposal: by noon, Friday 10 Nov 2017 |
| 13 – 17 Nov | Week 8 |  |
| 20 – 24 Nov | Week 9 |  |
| 27 Nov – 1 Dec | Week 10 |  |
| 4 – 8 Dec | Week 11 |  |
| 11 – 15 Dec | Week 12 |  |
| 18 – 22 Dec | **Mid-Winter Festival** | |
| 25 – 29 Dec |
| 1 – 5 Jan |
| 8 – 12 Jan |  |  |
| 15 – 19 Jan |  |  |
| 22 – 26 Jan | Week 13 |  |
| 29 Jan –2 Feb | Week 14 |  |
| 5 – 9 Feb | Week 15 | **Seminar Presentations TBC** |
| 12 – 16 Feb | Week 16 | **Seminar Presentations TBC** |
| 19 – 23 Feb | Week 17 |  |
| 26 Feb – 2 Mar | Week 18 |  |
| 5 – 9 Mar | Week 19 |  |
| 12 – 16 Mar | Week 20 |  |
| 19 – 23 Mar | Week 21 |  |
| 26 – 30 Mar | **Spring Fertility Festival** | |
| 2 – 6 Apr |
| 9 – 13 Apr | Week 22 | Submission of Final Product and Blog: by noon, Friday 13 Apr 2018 |
| 16 – 20 Apr | Week 23 |  |
| 23 – 27 Apr | Week 24 |  |