**Computer Games Development CW208 SRS and Project Report Year III**

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**Project Abstract**

Pathfinding over the last few decades and resulted in a lot of different approaches while many solutions are more applicable depending on the computer application my particular deep dive into it will be finding the most efficient of these to use in a game and by extension compare a hybrid to some solutions individually.

**Project Introduction**

I will investigate context-sensitive steering approaches and develop a hybrid AI which utilizes A\* and context-sensitive steering in unison and compare it to other steering solutions. The entity will swap between the two systems and use both to navigate to a point somewhere in the simulation, this will be especially interesting when the goal has the potential to move.

**Background**

There aren’t really any games that come to mind but I’ve found practical applications of steering algorithms and complex systems such as in context-sensitive steering to be quite interesting as trying to do it any other way results in a lot of dirty code from even the cleanest “by-the-book” programmers as a lot of instances have to be hard-coded.

**Project Description**

My project will contain a grid and various obstacles that will serve to obstruct the various pathfinding implementations. The pathfinding AI will be represented by triangles and each behaviour will be clearly labeled. There will also be highlighted goals in the level that the AI will try to find. However not all of the AI implementations will be aware of where the goal is on the level and will have to wonder about until they detect it.

**Overview**

Philosophy:

Philosophical point #1

With this implementation of a hybrid AI my goal is to compare it with previous solutions to steering for AI and determine how it fares against it. From the bit of research I’ve done, I have found no implementation of this hybrid.

Philosophical point #2

The “game” will not have multiple menus or any kind of menu system/splash screen etc. this is because it is purely a research project in which I wish to find quantifiable comparisons between other solutions.

Philosophical point #3

It is important that each AI implementation works correctly and accurately as the results will be corrupted otherwise.

Philosophical point #4

Measurements carried out must be a quantifiable measurement and not a subjective measurement or opinion of how they operate.

**Define the Application**

The application will be an accurate simulation and comparison of three possible AI solutions: “Context-free” steering, “Context-sensitive” steering and A\*. Context-free steering does not have any knowledge of it’s environment and interacts with obstacles as it collides with them. Context-sensitive steering has numerous systems that calculate the danger and desirable directions and compute in several directions simultaneously, representing the value of each direction numerically.

**What is the Application Supposed to do?**

This application is supposed to measure how long each steering algorithm takes to traverse the obstacles towards the goal. Using time and other quantifiable measurements to determine which is the most efficient.

**Who is going to use this application?**

I will be the only person using the application but the end product should allow any user to move the goal around.

**Context Diagram and Use Cases**

Metrics: If I successfully implement context-free steering, context-sensitive steering, my A-star Hybrid and attain quantifiable information that will determine which is the most efficient then I will have been successful in my endeavour.

**Is there a precedent for this application? (Your inspiration)**

There aren’t any implementations of the hybrid that I could find but there has been a lot of research done into pathfinding and the effects it can have on gaming and programming. AI is commonly what the players will complain about when it comes to games and efficient solutions to steering in dynamic environments are quite convoluted and hard to read or even explain to other programmers.

Project Milestones

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