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Abstract

The abstract text goes here.

Acknowledgements

Shout out to my bois

1 Introduction

From the beginning of the project the objective has been to develop a mathematical equation to evaluate escort mission maps. Then to procedurally generate maps that can successfully follow the evaluation technique created. The dissertation produced underneath documents the work that was involved in achieving this.

1.1 Motivation

With video games being one of the largest markets in the world right now, gaming companies must be developing and releasing their games as quickly as possible. If there is any conceivable way for them speed up releasing their games, they should take these approaches.

One of the biggest genres of games currently is team based shooters. With one of the larger games in the genre being Overwatch with currently over 35 million players worldwide. . This genre of game has a very different development cycle to other games relying on continual updates adding new maps and characters to keep players interested and continually playing. To release new maps and characters on a regular basis can be difficult especially if the game has a large competitive scene because the new feature must be fully tested before released.

With testing new features in games becoming the most time consuming part of the development cycle, companies must look into other ways to streamline the testing of games. In this project one of the possible ways to decrease the time taken to test maps is explored. If companies can use a mathematical formula to test the fairness of maps, rather than the more conventional user based testing which can take up to several weeks, would allow for companies to produce more content in a quicker time frame, generating a greater profit and allowing for better content to be produced in the future.

1.2 Aims and Objectives

There are two main aims of the project, the first is to create, implement and evaluate an algorithm that assesses escort mission maps once this has been complete, the next aim is to plan and develop a piece of software that can successfully follow the algorithm produced. The objectives below have been selected in order to accomplish these aims.

- Research relevant topics and papers.
- Create or use an existing framework that can be used to develop the map.
- Design an algorithm taking into account size, path of the payload and fairness.
- Develop a programme that can procedurally generate escort mission maps.

1.3 Scope

1.3.1 Deliverable

The items to be delivered from this project are: An algorithm that can evaluate any escort mission map and inform the user of the strengths and weakness of the map; A C++ program that can procedurally generate maps that can be tested by the algorithm; the results and analysis of the surveys that examine the credibility of the evaluation algorithm.

1.3.2 Boundaries and Constraints

When testing a map there are a large amount variables to be evaluated, as time is one of the limiting factors in this project, it was decided that 3 major factors would be tested. They are:

- The size of the map.
- The quality of the object that will be escorted's (payload) path.
- The overall balance\fairness of the map

1.4 Chapter Outlines

- Background - Discusses the research made into the topic.
- Methodology – States the methods used throughout the implementation process.
- Results – Displays the results from the tests carried out.
- Conclusion – Summarises results, assess s

2 Background and Literature Review

2.1 Introduction

In this chapter we will introduce the ideas behind this project and take a more in depth look

2.2 Escort Missions

An escort mission is a game-mode in team based shooters such as Overwatch and Loadout. In this mode there are two teams, the attacking and the defending team. The two teams have different aims in order to win. The attacking team attempts to escort the payload across the map to an objective while the defending team tries to stop them. While it is difficult to pin down the first game to have escort missions, one of the more notable uses was in 2007 with Team Fortress 2 by Valve, while it was not originally included in the game it was added in the first free update. It is important to note that the original Team Fortress had a game mode called Escort but this has many differences with its sequel such as the payload being a controllable player and there being three teams. Other games that use this game mode are Global Agenda and Wolfenstein: Enemy Territory.

2.2.1 Maps

Maps for escort mission maps have some specific requirements that they must adhere to, so they can be classified as escort mission maps. Some of these requirements are

2.3 Path-Finding

2.3.1 Dijkstra's Algorithm

Published by Edsger W. Dijkstra in 1959, Dijkstra's algorithm is a way to calculate the shortest path between nodes on a graph. Solving the single-source shortest path problem. Nodes on a graph can represent either a 2-dimensional grid or points in a 3-D space. The most common example of a real life application of Dijkstra's algorithm is being used in geographical maps to plot the fastest route between two cities, where each city is a node and the roads are associated with a weight.
The algorithm works by initially marking the distance from the starting point to ever other vertex on the graph. ——————————Add how it works———————

2.3.2 A Star Pathfinding (A*)

2.4 Exsiting Work

3 Methodolgy

3.1 Introduction

This section looks at the methods used during the implementation of the project.

4 Results

5 Conclusion

References