Efficient and Smoothed Pathfinding - Report

IAJ Group Number: 22

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Abstract

In games we often want to find paths from one location to another. In this project, we experimented and evaluated several algorithms used, in the video game industry, to deal with this problem, which is known as Pathfinding.

1. Introduction

Pathfinding is a common problem in video games that consists in finding a good path from a starting point to a goal point avoiding obstacles and minimizing costs. For instance, in a RTS, like Starcraft, if the player has a unit selected and finds an objective that he wants to attack, the game has to calculate the shortest path to it, avoiding possible structures already built.

In our work, we face the problem of finding said path in a dungeon, which in video games is a huge area, typically indoors, that has multiple rooms. So, we implemented and evaluated several techniques used, in the video game industry, to face this dilemma.

The structure of the report is as follows: Section 2 presents the main implementation decisions in the different project topics. Section 3 presents the evaluation of the pathfinding algorithms implemented. Section 4 provides information about the optimizations done in the project and their evaluation. Finally, in section 5 we conclude.

2. Decisions

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2.2 Node Array

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2.3 Goal Bounding

OH YEAH!!!

2.4 Path Smoothing

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3. Evaluation

Our project was tested using Unity 2017.1.1f1 on Windows 10 version 1709. The specifications of the computer are an Intel Core i7-6700HQ @ 2.60GHz with 16GB DDR4 RAM, a NVIDIA GTX 965M and a NVMe SSD.

Tiago campeao!
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4. Optimizations

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4.1 Off-line Goal Bound Calculation

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5. Conclusion

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References

[1] P. Q. Smith, and X. Y. Jones. ...reference text...