INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER

Procedural 2D Map Generator

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Submitted in partial fulfilment of the requirements for the BSc (Hons) in Computer Science degree at the University of Westminster.

May 2022

Abstract

Procedural Content Generation is a technique that was introduced as a method of automatically populating a level with objects without the intervention of the game developer but this method still requires some logical contribution in order to prevent objects from being placed or terrains being generated in an over-exaggerated manner. PCG allowed game developers and large scale game development companies to save large amounts of time and budget and re-invest in different aspects of game development. One of the main aspects of PCG is level editing. Level-editing is one of the most time consuming aspects of game development and requires a lot of discipline when creating terrains, texturing them and populating them. Therefore, the recognition that PCG gained for its contribution to level-editing was immense and most game developers and companies considered utilizing its prowess.

But, like every other software or utility out there, there was a silver lining to using this technology. On top of being a heavy CPU / GPU process, procedurally generating worlds meant that the developer had no control over the final output of the terrain and thus couldn't create a blueprint (yet another process that takes an immense amount of time due to the requirement to map all objects present in the game world along with the terrain) of the map beforehand that can be used as a navigation map by the player to prevent themselves from being lost.

Bearing this disadvantage in mind, the research that was done, concluded in a positive note which left room to believe that a solution for this problem could be introduced as a novel approach with the usage of Unreal Engine and its plugin editing system. The idea behind this project is to introduce a solution capable of generating a navigation map (mini-map in other terms) that gathers all relevant level data for a selected level (fixed or procedural) and uses the data to map out an entire navigation map containing information about the layout of the terrain, which in turn will boost the confidence of game developers who consider using PCG to generate terrains, knowing that a utility capable of procedurally generating a mini-map as well, exists.