

Procedural City Generation

Abstract

As games grow in complexity, they become harder and more expensive to develop. One of the areas which requires the most amount of work is the modeling of 3D objects, where the traditional approach is to manually model every object that exists in the game. Procedural generation offers an alternative to the traditional approach, using computer algorithms and techniques to generate game content. Also, procedural generation is the way to generate infinite worlds, and an infinite variety of worlds.

The aim of this diploma thesis is to show how the procedural generation of cities can be done using computer algorithms, and to present a system I developed that generates cities. In chapter 2, I introduce some of the basic concepts in computer graphics and games that are relevant to the subject. In chapter 3, I show the steps to producing a city, and I present various alternative ways to generate each component of a city. In chapter 4, I present the system I developed that generates cities. In chapter 5, I give some examples of commercial systems that procedurally generate content, and their impact in the industry.

The conclusion is that procedural content generation will slowly become more and more present in video games and films, as the minimum accepted standard for realism grows.

This work is the result of my own activity. I have neither given nor received unauthorized assistance on this work.