Procedural Modelling of Cities implemented as a Blender Plug-In

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1 Previous Short Term Objectives

1.1 Progress On Project Thesis

Progress was to be made on the related work section of the final thesis. Specifically the related work section was to be altered to accurately reflect the layout and approach of all the other chapters in the literature review. The related work section was also to be expanded to include more references and information.

1.2 Region Extraction

An extreme programming session was to be held during the week to fix the problems associated with the regionextraction algorithm.

1.3 Subdivison

A method of subdivision was to be implemented or a method of implementing Blender's subdivision algorithm was to be found in order to allow for the effective divison of regions into smaller areas to be used for city blocks.

2 Progress

2.1 Thesis Progress

The related work section of the final thesis hand in was reorganised to reflect the other chapters and some of the suggested changes from the literature review were implemented, further work is required in terms of increasing the information contained within the related work section.

2.2 Region Extraction

A succesfull method of region extraction was implemented as a direct result of the extreme programming session held on Friday the 5th of October. A method

which progresses around the paths in a graph and at any intersection selects the path which moves off at the smallest angle was devised. Specifically this system generates the correct region information for all of the regions within a given city as well as generating the region which encompases the entire outer region as well.

2.3 Subdivision

It was determined that for the most regualr and city like results the regions which are sudivided need to be quad shaped and not triangular. Thus before subdivision can be implemented a method for combining neighboring triangles on a face needed to be created. This results in all the faces of a region shape being rectangular with the exception of one possible final triangular face. This happens if the origional region was made up of an odd number of triangles. Once these quads have been determined, they are subdivided by linking the midpoints of opposite edges around a face. The repeated subdivision of these faces then results in the generation of regular grid type edges and regular quad shaped regions which can be used for building generation.

3 Problems

4 Objectives for next week

4.1 Suburb Completion

The objective for next week is to have the system able to generate roads and building objects out of suburb regions. This will allow for the final confirmation of visual results from the project. Once the system can effectively generate and display all the road networks and building objects then parameters for the highway generation system can be determined which allow for the effective generation of the various road layout templates.

4.2 Progress on Thesis

A first draft of the third chapter of the thesis will be drawn up. This draft must discuss and explain the methodology and overall design of the procedural city generation system. This will include the description of the basic city generation system which is used to generate free or restrictionless cities as well as the various extensions and adjustments which were made to the system to allow for the generation of the various other forms of city.