

Procedural Modelling of Cities implemented as a Blender Plug-In

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1 Previous Short Term Objectives

1.1 Python Instantiation of a Road Network

The goal for this past week was to get some visual results out of the completed python instantiation of the road network generation system. The Python classes should be able to accurately present an object orientated representation of roads, highways and intersections. As a test case a raster style of road network was to be generated.

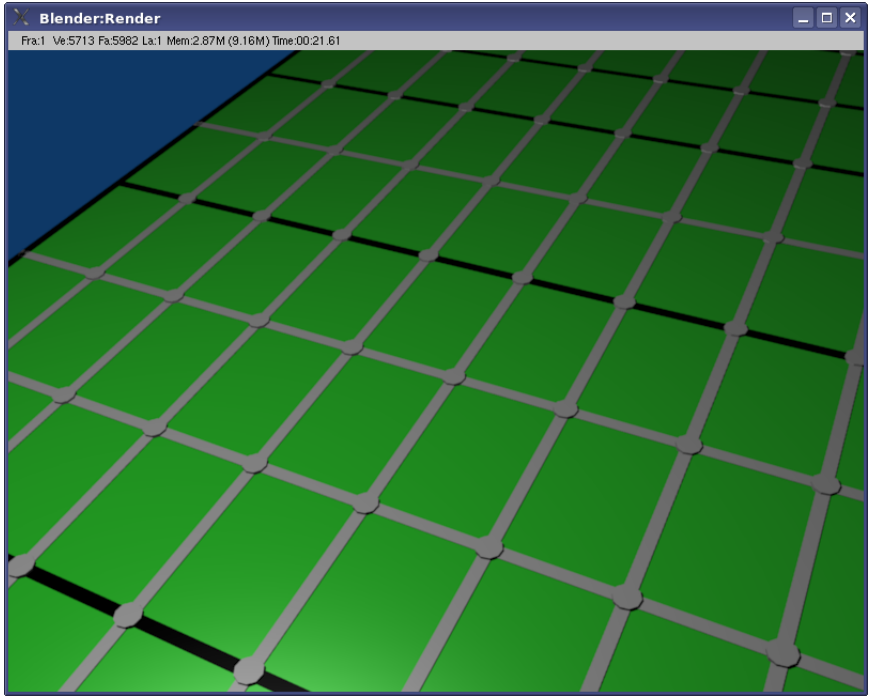
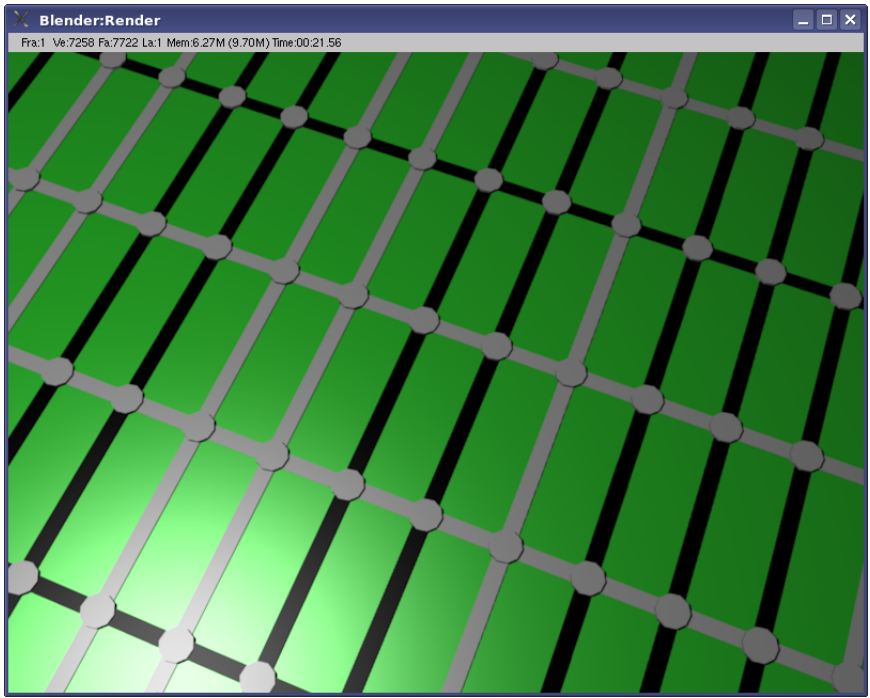
1.2 Literature Review Update

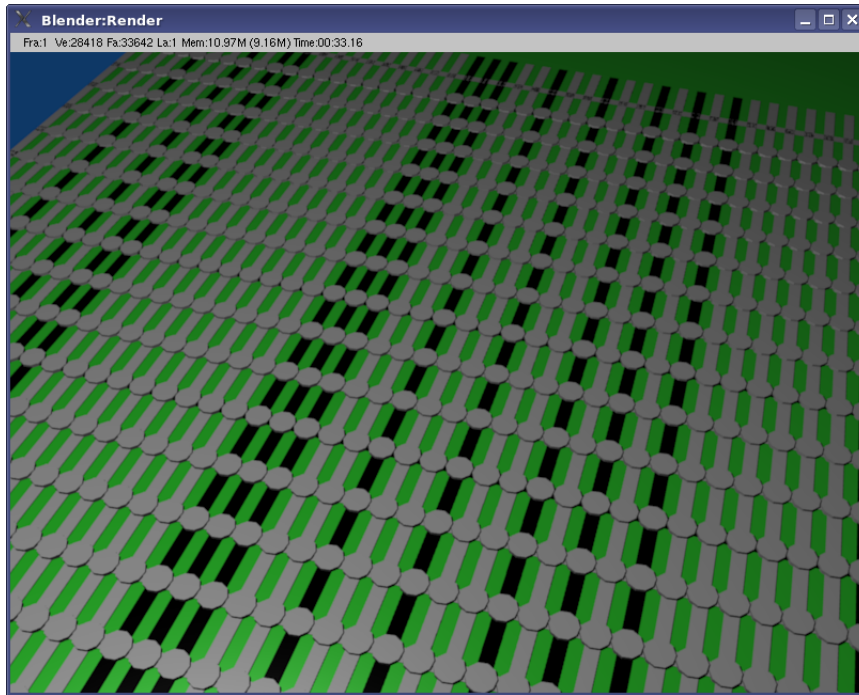
Continuing on im preparation for the literature review, a futher paper was to be summarized. Specifically [?] was summarised in relation to [?].

2 Progress

2.1 Python

The python system now produces visible results of a road network. The various classes have been written in Python and combines to create a Road Generation module which can instantiate roads, highways and intersections. It also contains various classes that can be used to generate various types of road network, specifically raster or chackerboard and branching. The instantiation at present simply creates curves which are then beveled with a simple plane shape to create the roads and the intersections are represented by simple cylinders. These however can now be easily updated to more accurately reflect the specific objects they represent. Due to the separation of the objects into their own classes, the representation of each object type is encapsulated within each class and is thus easily changeable without affecting the integrity of the rest of the system. Further to this the completed system now allows for further investigation into the various methods of road network generation which can be tested relatively easily by implementing them into the system.





2.2 Literature Summary

An initial summary of [?] was completed summarising particularly the types of road template which the paper focuses on and the process which their system follows. This paper is very similar to [?] and so the differences and similarities were also reviewed.

3 Problems

Two minor problems were encountered this week. Both pertain to the complexity of the system. The first problem that arises is in finding a suitable mechanism for determining where two roads intersect, Blender provides a function for comparing two curves which returns their point of intersection, this however may result in comparing every road to every other road in the entire network which may in time prove to be very computationally expensive. The second issue which arises is less problematic and relates to the render time of the scene. The methodology employed by the system results in the scene containing hundreds of objects, and even without assigning those objects any materials or performing any form of complex render the scene still takes thirty seconds to render.

4 Objectives for Next Week

4.1 Region Extraction

One of the objectives for next week is to focus on methods for region extraction, specifically the system needs to be able to extract regions between highways to be used for creating side streets and in the long run it will also need to be able to extract further regions to create buildings and city blocks on. Thus some method of extracting region information must be derived.

4.2 Scene Improvement

The current render of the scene are very basic and crude, some attention must be paid this week towards replacing road segments and intersections with appropriate objects which are properly modeled and rendered.

4.3 Literature Review

A final objective for this week will be to revisit the literature summary produced this week in order to attempt to improve it. Any suggestions or corrections will be implemented and further preparation for the literature review will be gleaned.