

Project: Large Scale Geographic Visualizations



University of
Zurich^{UZH}



Topic

Terrain visualization remains an interesting topic of research as with the advancement of hardware, precision of data acquisition is also increasing. In the recent times, a number of level-of-detail based algorithms as well as procedural terrain methods have been proposed to leverage the GPU power to obtain high frame and triangle throughput rates.

Assignment

One such terrain rendering technique is RAS^TER [4] which deals primarily with out-of-core rendering of large terrain data sets. In order to produce full perspective 3D geographic visualisations in combination with the terrain information the system capacities of our terrain rendering software have to be extended. The tasks for the students will be to extend the software in one of the following topics:

1. Procedural terrain algorithm working for a 3D generated terrain.
2. A Level-of-Detail implementation for a specific data type (Volumes or Meshes etc.)
3. An extension of a climate volume renderer to dynamically navigate through climate dataset.
4. An implementation for large scale graph visualizations within the perspective 3D view.
5. An extension to view large scale city models based on meshes or point clouds
6. A port of viewer to mobile client to make visualisations of terrain also accessible on embedded devices
7. An implementation for an update of the Equalizer parallel rendering framework

For Master thesis projects consist of three

main project phases, the project planning where the students learn how to plan a computer graphics related project, the second phase is the main implementation phase where the software will be developed until a feature complete state and the third phase where they learn how to handle change requests and deployment of projects.

Requirements

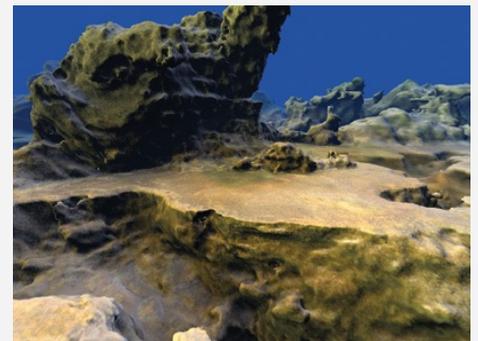
Cross-platform application development with QT, C++ and OpenGL, and a mathematical background. The CG lab is required if the project is intended to be a master project or master thesis.

Work Load

- 20% theory
- 70% implementation
- 10% testing

Project Type

The goals of the projects are adjusted based on the scope of the topic and as well



as the project type. This project is mainly meant to be a Master project or Master thesis but also Software projects and Bachelor Thesis Projects are possible.

Supervision

Prof. Dr. Renato Pajarola
Alireza Amiraghdam (Assistant)

Contact

Write an E-Mail to amiraghdam@ifi.uzh.ch

