

SE 207

Scientific Visualization

Project 1

Project Objectives:

In this project you will learn about the interactive analysis of 3D dimensional data sets using slicing planes.

Project Description:

This is your first project of the quarter and will give you the opportunity to refresh your C/C++ and OpenGL knowledge while implementing a visualization tool for 3D datasets. You are asked to implement a slicing tool for data arranged on a rectilinear-grid and to visualize cross-sections of the provided volume data. You are expected to implement the following components for this assignment.

Part 1:

Implement an interactive slicing tool that can create cross sections along one of the coordinate axes (x, y or z). I.e. the cutting plane should be perpendicular to the respective axis of the coordinate system. You are also asked to draw a bounding box, representing the size of the overall data set. That is, even though you are only showing a single slice at any time, the user should be able to see where this slice is located within the 3D dataset.

Part 2:

Implement interactive slicing along any of the coordinate system axes. This means that multiple cutting planes could be active at any give time. I.e. the user should be able to first slice along the x-axis, then slice along the y-axis and finally along the z-axis. The resulting image would show up to three different slices being rendered at the same time.

Part 3:

Implement interactive slicing from an arbitrary angle. Here the user should be able to interactively define a customized axis for the cutting plane. The cutting plane therefore does not have to be perpendicular to any of the coordinate axes.

Data sets to test your application are available at
<http://vis.ucsd.edu/courses/se207/data>

HAVE FUN !!!