School of Computing

NUS National University of Singapore

This file contains information about the Layer Peeling code developed at the School of Computing, The National University of Singapore.

*****THIS VERSION IS CONSOLE BASED.*****

PROGRAM NAME

LayerPeeling - This program outputs a watertight piecewise linear interpolation of a 3d point set.

DESCRIPTION

This program first reads in an input file which consists of a 3d point set. Based on the 3d coordinates of the input point set, the program applies the layer peeling algorithm on the point set and produces a 3d closed manifold. This algorithm is based on the paper "Surface Reconstruction by Layer Peeling" by C.W Lim and T.S Tan. This work was published at Pacific Graphics 2006 Conference; for more details, see the webpage at www.comp.nus.edu.sg/~tants/layerPeeling.html.

There are 4 parameters which the user can modify:

Single Manifold - The algorithm may produce more than 1 connected component in the output. By selecting "true", the algorithm will search and store the largest connected component, while removing all the smaller ones. Default value = true.

Sub-sampling - Some point sets have points in almost exact coordinates, making the construction of the triangle fan to be extremely problematic. Based on a local estimate of the sampling density (distance to the 16th nearest neighbor), the algorithm will remove points which are within a selected percentage of the distance. Default value = 20%.

Number of Layers - The user can choose to construct only a stated number of layers. Default value = 999

Smooth Manifold - Removes faces which are particularly sharp. Default value = true.

INPUT FILE

rawPoints.txt - The input file must be a text file that contains 3d coordinates of the sample point set. Each line of text in the file contains the 3d coordinates of one point in the point set. The coordinates can be separated by either whitespaces or tab character. If the file does not exist, the program will terminate itself.

configuration.txt - Contains the 4 parameters in the following sequence.

Single Manifold (true/false)
Sub-sampling (without the "%")
Number of Layers (in numbers)
Smooth Manifold (true/false)

If the text is typed wrongly, the value will be set to the default value.

OUTPUT FILE

The output of the layer peeling algorithm is saved under the filename "outOFFFile.ply" in the same directory. PLY format files can be opened by programs such as 3D studio max or Deep Exploration.

OTHER FILES

This program needs other dll in order to run.
For opengl, http://www.opengl.org/resources/faq/technical/gettingstarted.htm
For ANN, which is the program we use to compute the neighborhood,
http://www.cs.umd.edu/~mount/ANN/. The version that is used in this program is 1.1.

3rd December 2006