Computer Graphics : Assignment 5

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(MT2013008)

21 - April - 2014

1 Prerequisite Libraries

1. OpenGl (Mesa libraries)
2. Qt5 libraries

2 Build Steps

1. Change directory to folder MT2013008_Assignment5/Src
2. Run the following command

   qmake MT2013008_Assignment5.pro -o ../Build/Makefile

   This will generate the Makefile in the Build folder.
3. Change directory to folder MT2013008_Assignment5/Build
4. Run the following command

   make

   This will build the complete project and generate and executable in the Build directory.
5. To start the application, go to build directory, execute following command

   ./MT2013008_assignment5

3 Usage

Note: To enable keyboard controls, left-click on the left side of the screen.

1. Application starts with a file browser.
2. Go to plyfiles folder and select a ply file to render.
3. Use 'p',';' keys to scale up or down.
4. Use 'a','s','d','w' keys to translated left, right, up, down.

5. Use 't','f','g','h' keys to rotate object left, right, up, down. Or use the sliders at right. Or left-click on the screen and rotate with mouse.

6. Use 'i','j','k','l' keys to rotate light left, right, up, down.

7. Use key 'q' to enable/disable the movement of light with object.

8. **Use key 'n' to sub divide**.

9. **Use key 'm' to navigate through the points of control mesh**.

10. **Use key 'z' to move the currently selected point of control mesh**.

11. **Use key 'e' to export the sub divided mesh as a ply file**.

4 Issues with implementation

1. Deciding the correct data structure is the most crucial aspect of this assignment. I did not fix upon all the use cases initially, and thus had to do lot of modifications later on.

2. Calculating the correct normal direction (Inwards/Outwards) (Still pending).

3. If the input data was a list of triples of vertices, some change in parser will be required.

5 Performance

1. After three sub-divisions, it was taking particularly long time to sub-divide.

2. Process of editing the control mesh is not very responsive (No use of mouse).

3. For large size models, too much time was required for sub-division, even for a single sub-division.