

Closing 3D surface rendered image for model sculpting

OsiriX Foundation

September 7, 2009

1 General Conditions

Please refer to <http://www.osirixfoundation.com/awards.html> for General Conditions.

2 Category

This document describes a **Category 1** Plugin Award Project.

3 Description

Devices that allow to generate 3D plastic or resin-based models of objects are now being used in medicine to generate models of anatomical structures such as bones, special organs or prosthetic implants. These 3D printers can generate low-cost physical models of these body parts that can be useful for surgeons and interventional physicians for planning surgical procedures or evaluating different treatment options.

OsiriX provides all the necessary tools for generating 3D data sets of surface-rendered objects that can be easily used for “printing” 3D physical models. It also allows to export these data in STL (.stl) format that is compatible with most 3D modeling printer devices. However, to do so, the data must be processed in a way that will allow the model to be generated without errors and defects. Most printers will require the data generated for tiled surface of the object to be perfectly closed with no holes or interruptions of the outside surface. This can be easily done by some simple mathematical morphology tools for closing all the surfaces and eliminating unconnected parts of the selected object.

4 Requirements

The goal of this plug-in is to provide an extension to the current 3D surface rendering tool of OsiriX, allowing the user to export the data of the object that is being rendered in a way that is compatible with printing devices that will

generated 3D physical models of the rendered object. The plugin should be activated within the 3D surface rendering window of OsiriX and allow:

- A simple interactive dialog that allows the user to adjust selective parameters that will close the 3D object and eliminate holes and missing parts of the surface.
- Unconnected parts should be identified and the user should be able to either connect them or eliminate them from the data that will be used to generate the 3D model
- Export the results in an STL file that can be easily exported to a 3D sculpting device

5 Deliverable

1. A fully functional plug-in that can be activated from within the 3D surface rendering window of OsiriX to further process the rendered data in a closed surface that can be sent to a 3D sculpting device
2. Interactive tool allowing the user to adjust some processing parameters and add or eliminate parts of the selected object
3. Simple dialog allowing the user to select printing parameters (scaling, etc.) as well as printer-specific parameters
4. Exporting the data in STL format and saving of the current settings for later retrieval and further processing of the 3D data
5. A simple interactive extension of the plugin for sending the data directly to a 3D printer device would be desirable

6 Contact

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