

"Lack of direction, not lack of time, is the problem.
We all have twenty-four hour days."
Zig Ziglar

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BasRock Software for Geotechs

Newsletter

May 2013



What's new? - Customise your fall body

This newsletter explores the possibilities of the custom shape improvements to fall bodies in Trajec3D. Autodesk 123 Catch is free photogrammetry software and can be used in conjunction with GEM4D and Trajec3D to reproduce any fall body shape.

1. GEM4D: The Version 1.2.7 installation file is substantially larger than previously due to added "under-the-hood" functionality that will be exposed over time. Improvements were made to the mouse interaction with the scene to eliminate jumps that occasionally occurred during double clicking, and GEM4D can now accommodate different coordinate systems.
2. Trajec3D: The loading of custom shapes as DXF-files was previously unstable and limited in size to 500 vertices. This functionality is now stable and allows for fall body meshes with up to 65 000 vertices. Some users reported errors during the installation of Version 1.5.3, and Version 1.5.4 includes more dependency files and now install seamlessly on Windows XP, 7 and 8. Trajec3D can now accommodate different coordinate systems.

Previous newsletters are available from the Facebook Page <http://www.facebook.com/basrock4u> and all ten BasRock software packages are currently available free of charge from <http://www.basrock.com/>.



Autodesk - 123 Catch (free)

Autodesk 123 Catch is free photogrammetry software and turn photographs into 3D models and available for download from <http://www.123dapp.com/catch>. The website contains training videos to get you going in no time. For this discussion, take photographs of the full body of interest, use 123 Catch to generate a 3D triangulation, and "File -> Export Capture as ... -> OBJ (obj)" file.

GEM4D - Points of embodiment

Step 1

Load the OBJ-file from 123 Catch into GEM4D with "Load -> Import Wavefront OBJ-files". A few pop-up forms will request further information during the importing process; such as object colour in GEM4D (yellow was selected in the example to the right), DXF file name after conversion, and the coordinate system (keep the default settings).

Step 2

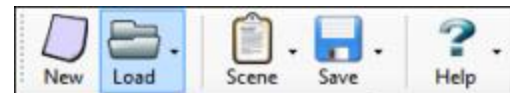
The coordinate system from 123 Catch is sometimes at an angle to the intuitive "Up" position, and the "Trackball" rotation mode works better in these cases. The best way to fully grasp the differences between the rotation modes, is to select different modes and rotate the models. For objects with an intuitive "Up" direction (such as terrains or mine plans), "Terrain" rotation works best, otherwise use the "Trackball" rotation mode. The "Joystick" rotation mode is rarely used.

Step 3

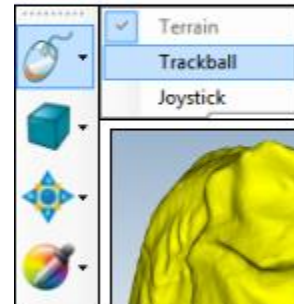
Select the "Create Delaunay3D" function from the Toolbox-button and keep the default tolerance of 0.005. This function drapes a surface around an object, similar to wrapping a plastic bag tightly over a physical object.

Explanation

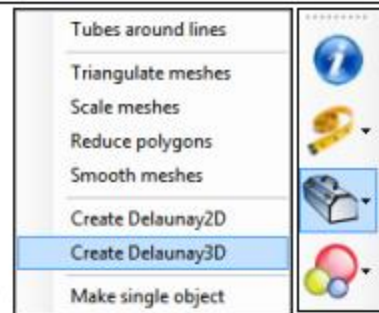
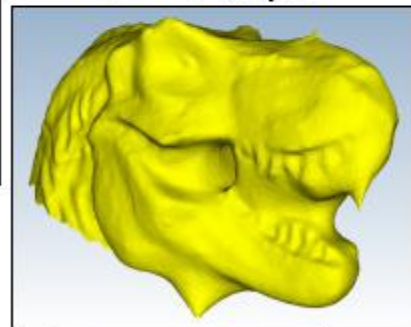
The "Explanation" image shows both the yellow original object and the transparent



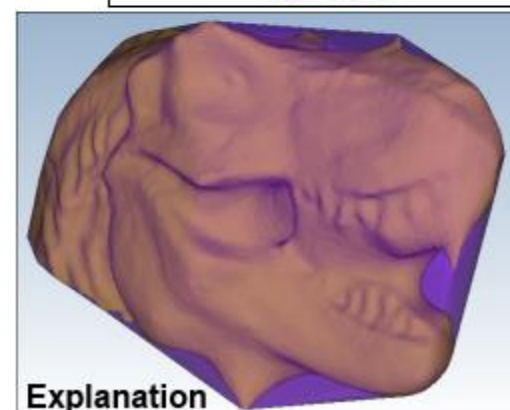
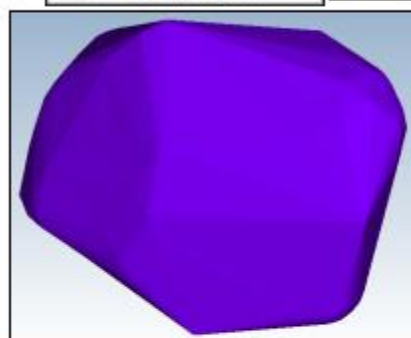
Step 1



Step 2

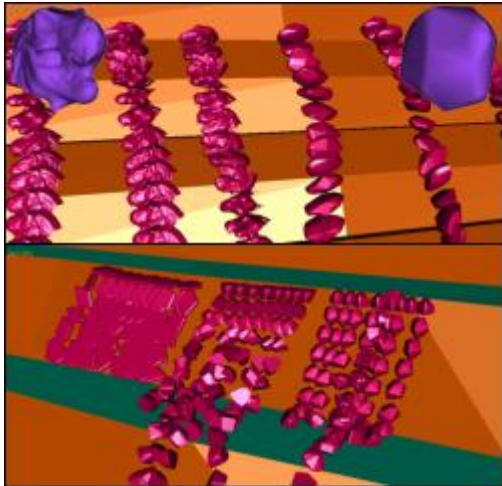


Step 3



Explanation

purple Delaunay3D triangulation to illustrate the output from the function. Delaunay3D can also be used to create fall bodies for Trajec3D from a few points or lines created in a mine design package to roughly represent the edges of a rock.



Trajec3D - Let your creations loose

Load a custom shape with the bottom button in the fall body shapes toolbar. Pressing the custom shape button will open a Dialogue Form to select the DXF-file with the object information. In this example, both the original yellow or purple Delaunay3D meshes could be loaded as rock fall bodies. The images to the left show the fall paths of four different fall bodies that were generated as discussed in this newsletter.

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