



Candidate

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Development of HTML5/X3D Web-based Visualisation Tools in MATLAB for Photorealistic 3D Modelling of Cultural Heritage.

Referent

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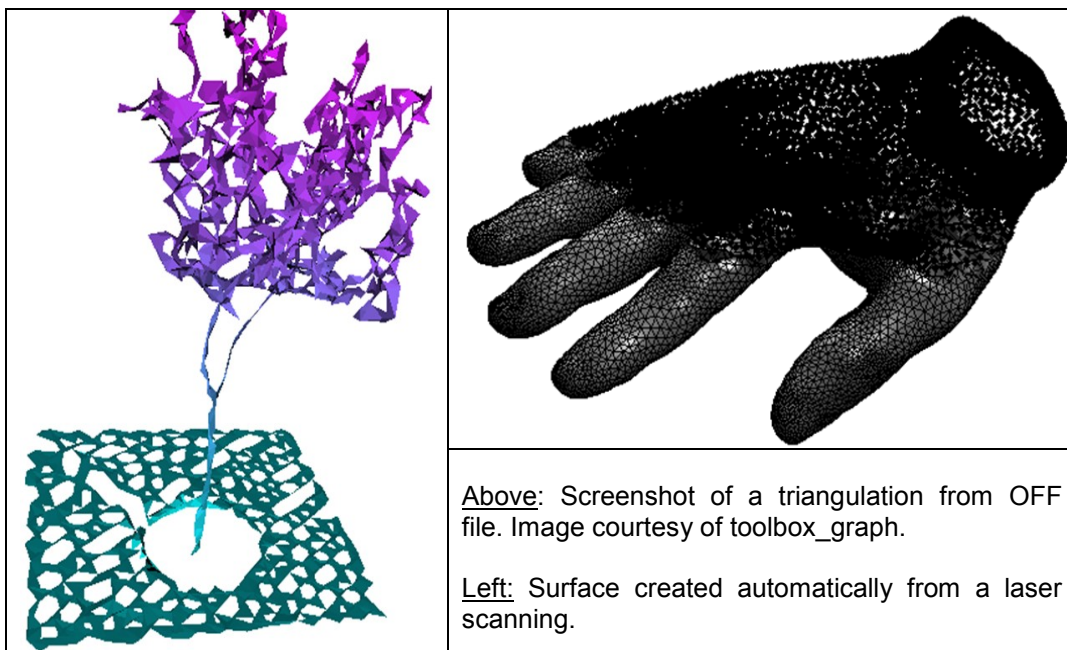
Keywords

X3D, X3DOM, HTML5, MATLAB, Interactive 3D, Automatic Triangulation, Cultural Heritage, Interactive Surface, Graphical User Interface Development Environment.

Summary

Spatial data acquisition can be obtained by means of various techniques; a common way to get data is by making measurements with laser scanner equipment. Data from a laser scanning are a point cloud and each point represents a position in the space. By linking points is possible to create a figure which looks like the real object. A tool named 3DFigure has been developed using MATLAB to manage the point cloud. The surface is generated by means of an automatic triangulation; the vertices of each triangle are the three closest points to the base point.

Objects which come from cultural heritage are the case of study in investigations which aim is to catalogue and document what there are. These works try to get famous between the people because they are cases of general interest. 3DFigure achieves that dissemination via internet because after creating the surface in MATLAB, the object is saved as an X3D object embedded in an XHTML file and managed by X3DOM. As a result to put on HTML XML syntax and X3DOM, portable devices can manage XHTML easily and with precision and without plug-ins or additional viewers.



Regarding to manage figures, 3DFigure opens data from OFF, PLY, SMF or WRL files. These files can be made with 3D modelling software which allows the creation of complex figures. These are treated by 3DFigure as a matrix with coordinates and another which says how the triangulation has to be made.