

1. System requirements

Miscrosoft .Net framework 2.0.

Standard 3 buttons mouse.

2. Import file format

Closed triangular mesh models in Wavefront OBJ ASCII format with only geometric data: vertices (v) and face (f).

3. Usage of Program

The usage of this demo program is very simple. All settings use default values and thus are mostly hidden from the user. Figure 1 shows the interface of the program.

3.1 Loading and viewing mesh models.

First, click the “open mesh file” tool button to open a closed triangular mesh model (in Wavefront OBJ format). The loaded model is shown in the viewing area, and the viewing parameters can be changed by holding down different mouse buttons (left: rotate, middle: pan, right: zoom in/out) while moving the mouse. Multiple models can be opened at the same time. By clicking the tab buttons of the filenames of the loaded models, the user can switch between different loaded models.

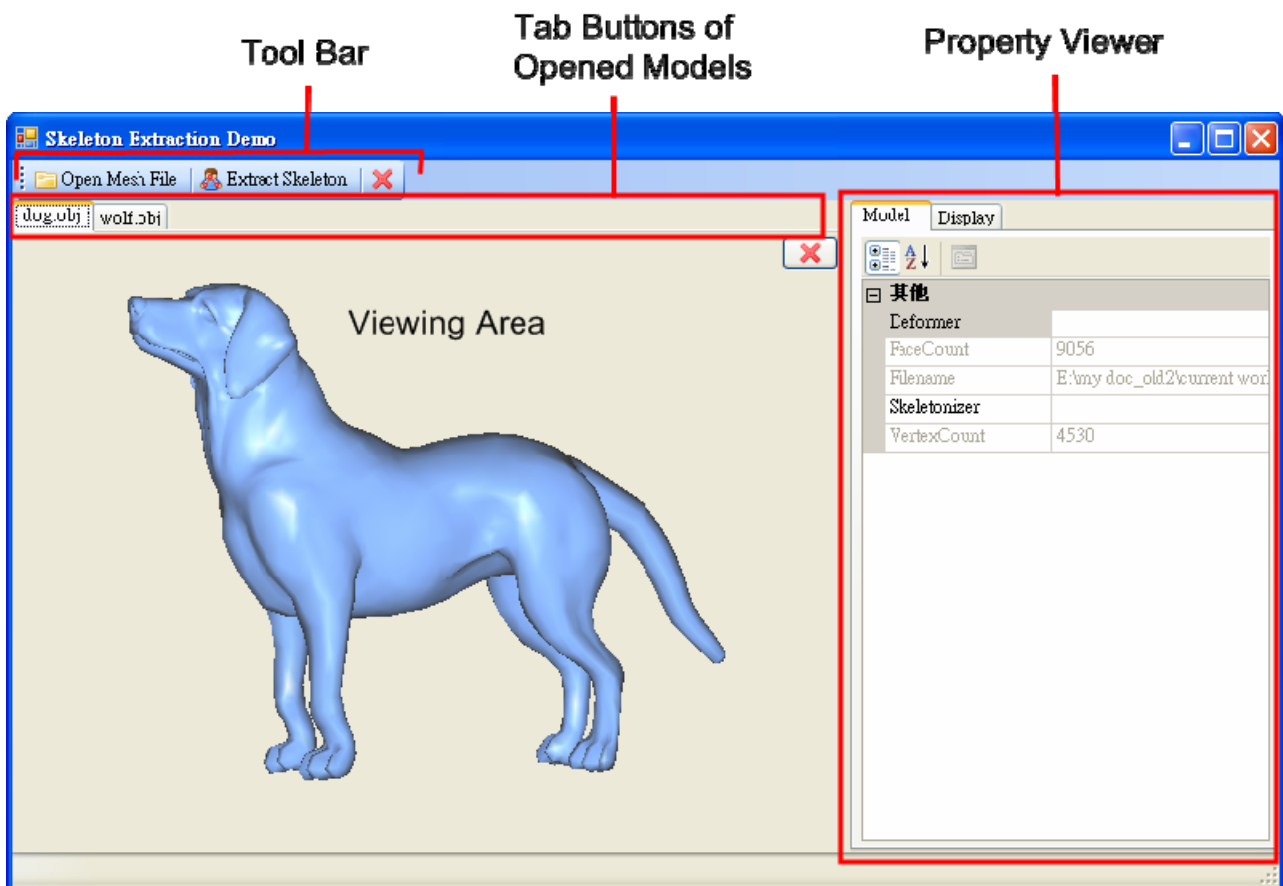


Figure 1. Layout of the demo program.

3.2 Extract Curve Skeleton

To extract the curve skeleton of the current model, click the “Extract Skeleton” tool button and the dialog shown in Figure 2 will appear.

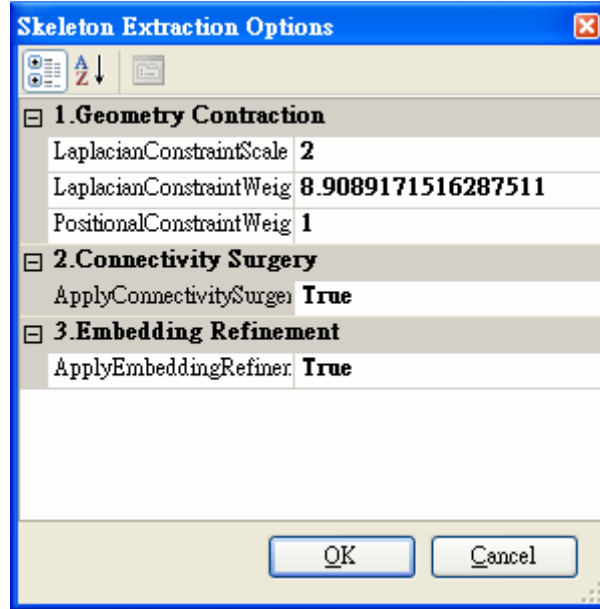


Figure 2. Curve skeleton extraction options.

This dialog shows the default settings of LaplacianConstraintScale (S_L), LaplacianConstraintWeight (W_L^0) and PositionalConstraintWeight(W_H^0). All the examples shown in the paper and the new examples submitted during rebuttal period were generated using these default settings. The connectivity surgery step and/or embedding refinement can be turned on/off by setting the values of “ApplyConnectivitySurgery” and/or “ApplyEmbeddingRefinement” to true/false. The skeleton extraction process begins when the “OK” button is clicked (or click “Cancel” to cancel the process). The skeleton is created automatically and the program switches to the transparent display mode (Figure 3).

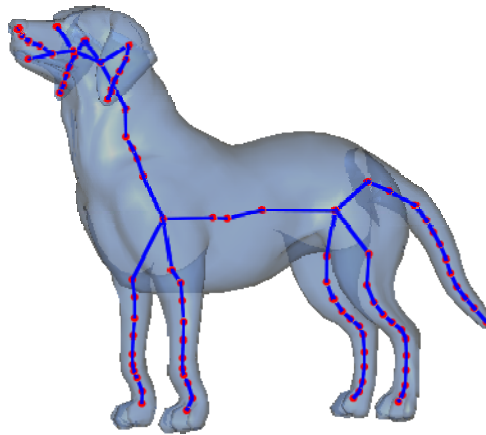


Figure 3. Extracted curve skeleton.

4. Mesh Property and Display Options.

The right side of the demo program shows the property viewer, which indicates information about the current model (the “Model” tab), such as the vertex and face numbers, and allows the user to change the display options (the “Display” tab), as shown in Figure 4.

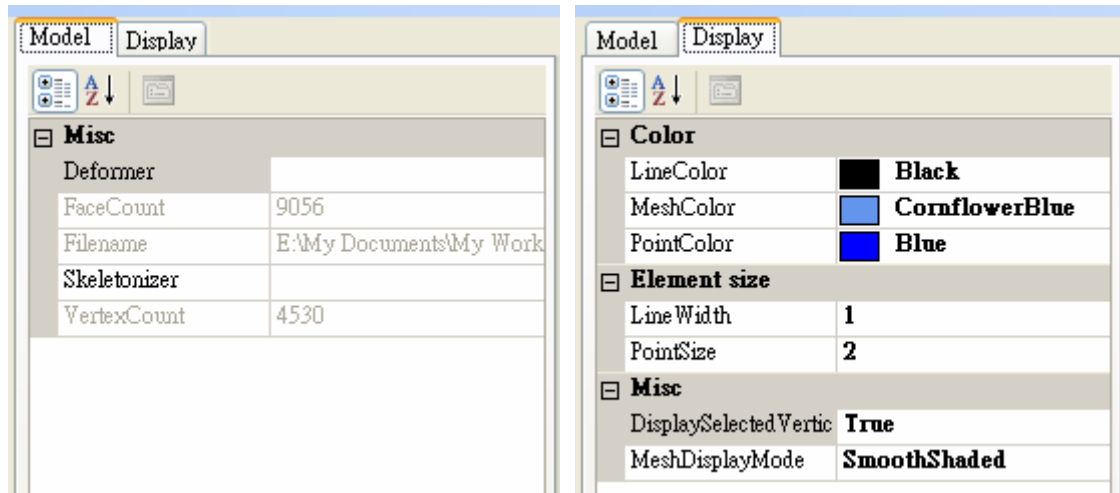


Figure 4. Model Tab (Left) and Display Tab (Right).

After the curve skeleton is created, the information and display settings of the curve skeleton are shown under the “Skeletonizer” field of the “Model” tab: expanding that node reveals the following subfields (see figure 5):

- Display Original Mesh: set this field to false to display the contracted mesh, rather than the original model
- Display Skeleton: set this field to false to hide the extracted curve skeleton.
- Node Count: show the number of nodes in the extracted curve skeleton.
- Skeleton Node Sizes: the size of skeletal node displayed.

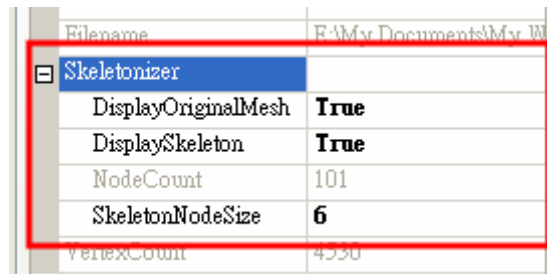


Figure 5. Information and display options of extracted curve skeleton.