

threedit .. editing programs

VTK and TCL/TK 3D shape editing and registration gui programs.

without any form of guarantee

really! .. This is a collection of editing programs developed for a Licentiat thesis (Brian Lading; 'Face modelling - 3D object tracking and segmentation'), you can use them as they are or as base for copy&paste.

editing programs

You'll need the VTK and the TCL/TK packages for these programs to work. (Since, some of, this is programmed for an old version of VTK, version 4.2, you'll probably also need to update parts of the code.)

shape editor Edit 3D VTK shapes.

texture coordinates Map an image onto a 3D VTK shape.

triangulator Manually triangulate a surface.

registrator Registrate 3D surfaces, landmarking, warping and registration.

showStuff Simple programs for different visualization purposes.

3D shape editor

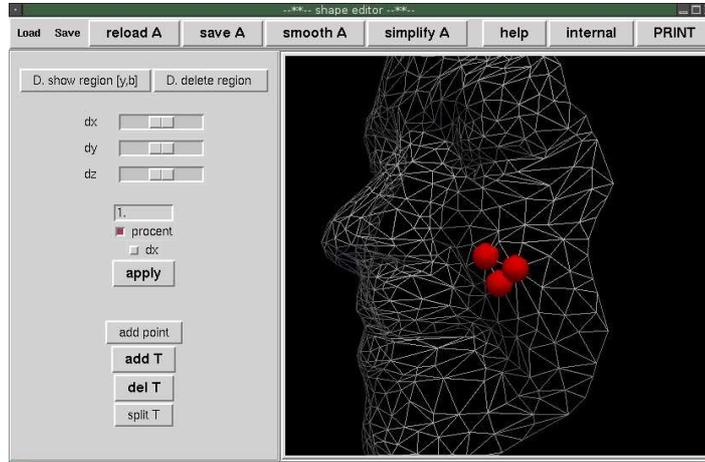


Figure 1: tcl/vtk 3d shape editing tool. Included: add points, delete points, delete regions, move points, add triangle, delete triangle, smooth surface, simplify surface, split triangles (ie open mesh).

```
..... XXXXXX .....
    --- general ---
'v': view ... center shape
's': surface
'w': wireframe
'q': quit

    --- landmarks ---
'l': add a new landmark
'n': choose nearest landmark
'm': move choosen landmark to current position

    --- edit ---
'a': add a point to be moved or removed
't': add a point marking top corner of 'region'
'b': add a point marking bottom corner of 'region'
'c': clear all edit points
'd': delete current point
'1': mark triangle vertex 1
'2': mark triangle vertex 2
'4': mark triangle vertex 3
..... XXXXXX .....
```

texture coordinate editor



(a) Points picked on 3D model and in 2D im- (b) Warping applied. Ready for additional
age. fine tuning points.

Figure 2: `tcl/vtk tcoords` editor, interactively set points on 3d shape and corresponding points in image. Thin plate spline warp plus a fine tuning functionality.

```
..... xxxxxx .....  
Texture Mapper  
-- add points (IN SAME ORDER) to shape and image --  
key 'a': add point to 3d shape  
key 'd': delete point selected in model viewer  
key 'r': delete ALL points in image  
key 't': pick point id. translate tcoords with 'z,x,c,v'.  
key 'z': move selected id one pix to the left  
key 'x': right  
key 'c': down  
key 'v': up  
key 'left mouse': add point to 2d image  
..... xxxxxx .....
```

triangulator

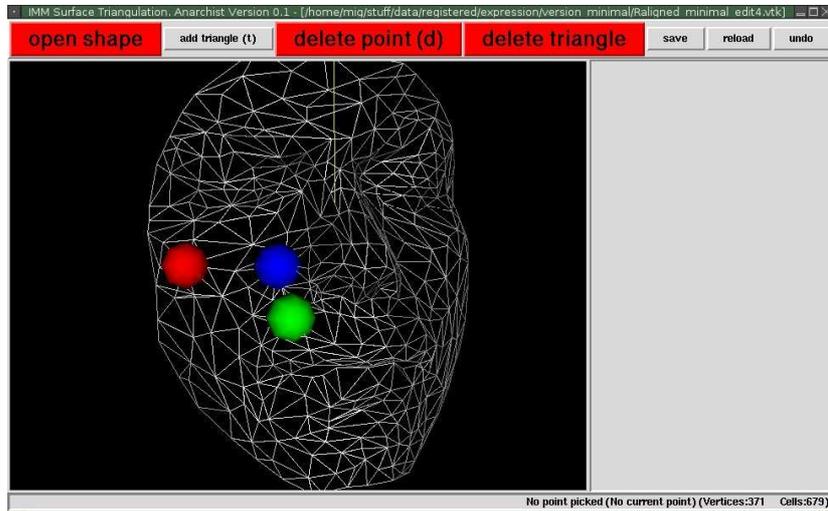


Figure 3: Manually triangulate a point cloud, good for small surfaces or special requests.

```
..... XXXXXX .....  
'a': pick triangle vertex number 1  
'b': pick triangle vertex number 2  
'c': pick triangle vertex number 3  
  
'p': view as points  
's': surface  
'w': wireframe  
  
't': add triangle (after points are marked with keys a,b and c)  
'd': delete selected point  
(buttons for 'delete triangle', and 'add triangle')  
..... XXXXXX .....
```

registrator

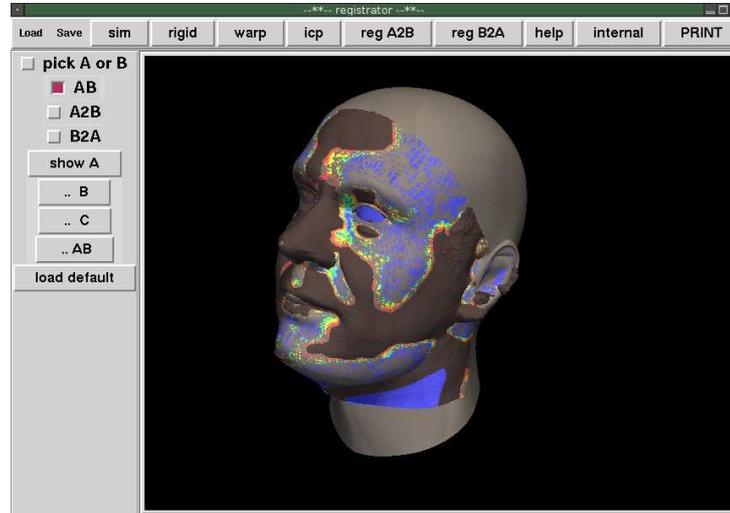


Figure 4: Manually select landmarks on both shapes (or load these) **Align** (similarity or rigid transform) or **warp** (thin plate spline). Register with closest surface point registration.

```
..... xxxxxx .....
    --- general ---
'v': view ... center shape
's': surface
'w': wireframe
'q': quit
    --- landmarks ---
'l': add a new landmark
'n': choose nearest landmark
'm': move choosen landmark to current pointer position
    --- edit ---
'a': add a point to be moved or removed
't': add a point marking top corner of 'region'
'b': add a point marking bottom corner of 'region'
'c': clear all edit points
'd': delete current point
'1': mark triangle vertex 1
'2': mark triangle vertex 2
'4': mark triangle vertex 3
    --- stuff ---
regA2B: ... copy closest surface point on B to A structure ...
```