Dr. House – User Documentation

This application is a basic graphical user interface framework for experiments on architectural meshes. The meshes are displayed in the form of wires or polygons inside the window and can be modified using custom controls in the control box at the left border of the window. By the support of *OGRE3D*, arbitrary information concerning the displayed meshes can be overlaid at 3D coordinates. The mesh can be translated and rotated using the mouse and keyboard.

Microsoft .NET controls that provide custom test procedures can easily be added using the Visual Studio GUI.

The following documentation is based on a symmetry detector that is implemented within the Dr. House framework.

Basic Usage

Start the *SemHouse.exe* executable. Depending on your system's performance, it may take several seconds until the main windows shows up.

Click the *Open mesh...* button in order to load an OGRE mesh file. While the mesh is loaded, the progress is reported below the button.

Visualization   Toggle polygon/edge/vertex rendering and rotate/scale/translate the model.

The control panel is explained in detail below.

When you close the main window, all settings are saved to a text file called *settings.txt*. Its contents are human-readable as they are made of XML statements and may be adjusted manually.
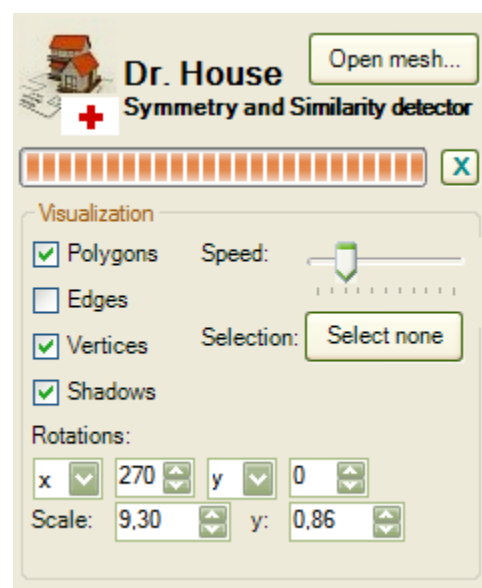

Illustration 1: Mesh Loading and Visualization Controls

Navigation in the 3D Window

Mouse:

Yaw   (turn left or right) Hold down the right mouse button and move the mouse left or right.

Pitch   (look up or down) Hold down the right mouse button and move the mouse up or down.

Select   Click a vertex using the left mouse button.

Move Forward   pull mouse wheel

Move Backward   push mouse wheel

Keyboard:

Move Forward `W` key or `▲` key

Move Backward `S` key or `▼` key

Move Left `A` key or `◄` key

Move Left round viewed object combination `Shift+A` or `Y` key

Move Right `D` key or `►` key

Move Right round viewed object combination `Shift+D` or `C` key

Move Up `Q` key or `Page▲` key

Move Down `E` key, `X` key or `Page▼` key

Zoom

Move Forward and *Move Backward* can be considered as Zoom In and Zoom Out, respectively.

Navigation Speed

The navigation speed can by adjusted using a control of the right column (please refer to *User Interface Description: Common Controls* on the next page).

Mesh Format

Meshes for Dr. House are provided in the form of OGRE3D mesh files. They can be generated by an *OGRE exporter* (http://www.ogre3d.org/tikiwiki/OGRE+Exporters), for instance for *Blender* (http://www.blender.org). If they are exported in the form of XML files, they need to be converted into the binary format using the OgreXmlConverter (http://www.ogre3d.org/tikiwiki/OgreXmlConverter):

```
OgreXmlConverter.exe Cube.mesh.xml
```

The XML format is useful for inspection purposes.

User Interface Description

Common Controls

(Illustration 1: Mesh Loading and Visualization Controls)

The mesh is loaded using the *Open mesh...* button. The progress bar visualizes the progress of the mesh loading process and is moreover intended for arbitrary use by custom code. The *X* button can be used to interrupt a running process (green: no process or active process; red: process interrupted).

Basic appearance settings are located in the *Visualization* box (turn polygons, edges, vertices or shadows on/off, rotate, scale, translate the mesh, clear selection). Optimal placement and scale are guessed from the object's bounding box. The *Speed* track bar allows for navigation speed adjustment.

Custom Controls

(Illustration 2: Sample Custom Controls)

The custom method selectors are located below the *Visualization* box (e.g. "Meanshift-based"). They activate or deactivate custom algorithms, the details of which are adjusted in the tabs below. Each tab is dedicated to a custom algorithm/technique. Custom controls are to be created by the programmer who customizes *Dr. House*. The *Developer Documentation* provides an in-depth description of the program and its customizability.

The *Show Results+Nav Window* button opens a separate window that contains at least a log tab which provides log outputs after an algorithm is executed. Illustrations 3 and show a sample application of the results window for cluster navigation after the meanshift-based symmetry detection algorithm has terminated.
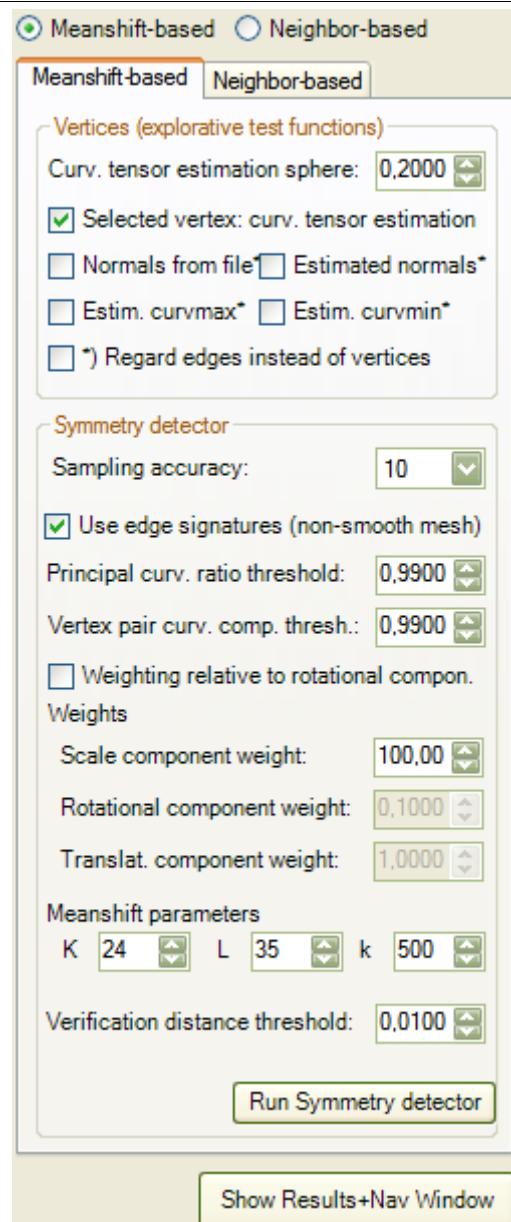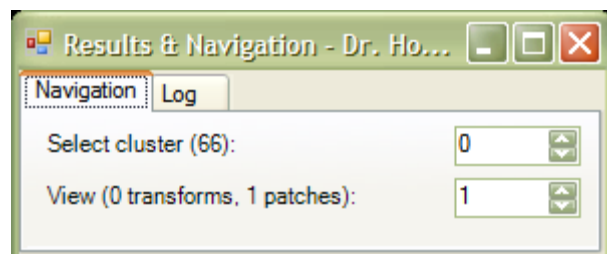

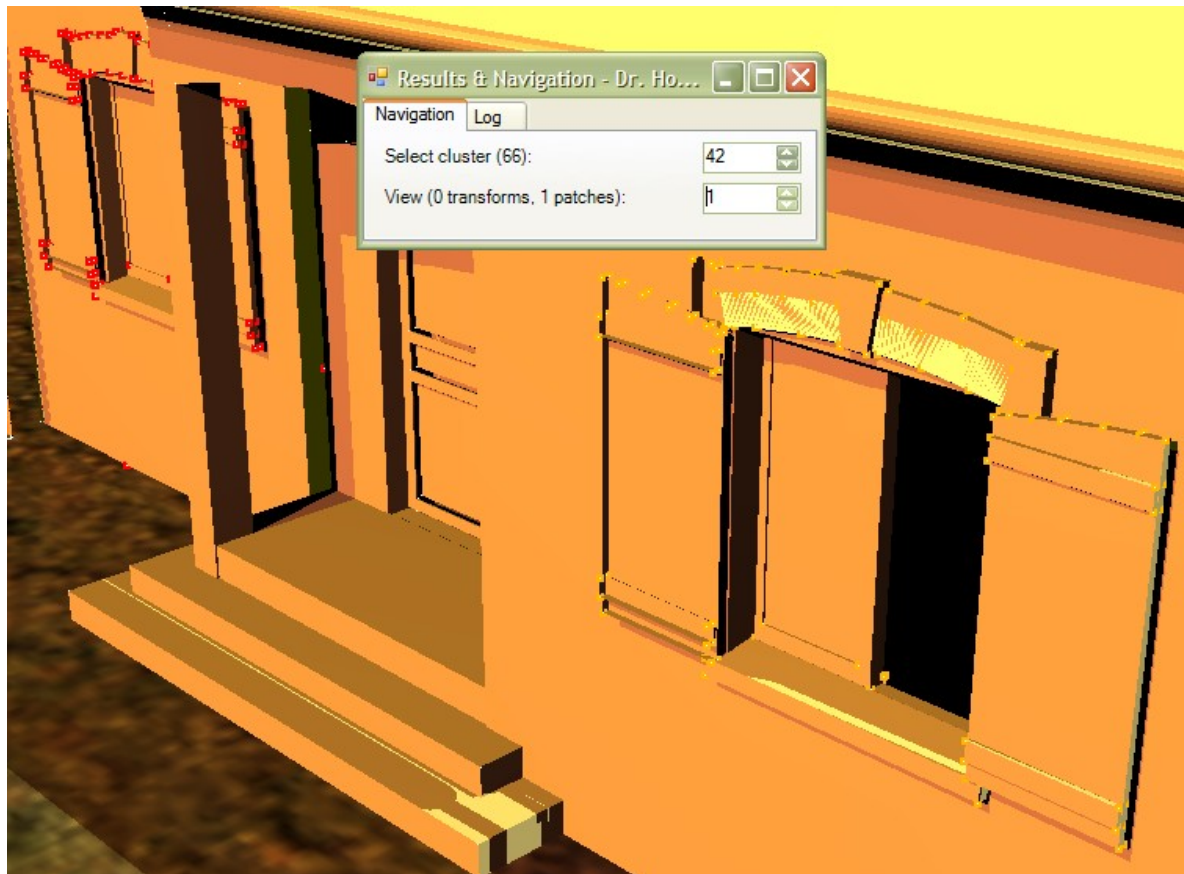*Illustration 2: Sample Custom Controls*

Illustration 3: Results+Nav Window Sample Application

Illustration 4: Results+Nav Window Sample Application