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.

**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](http://www.ogre3d.org/tikiwiki/OGRE+Exporters)), for instance for Blender ([http://www.blender.org](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](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 4 show a sample application of the results window for cluster navigation after the meanshift-based symmetry detection algorithm has terminated.
Illustration 4: Results+Nav Window Sample Application