2. Basics of 3D Modeling: IV. Sculpting system

Sobhi Ahmed

Comp3351

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Outline

I. Object mode
II. Edit mode
III. Modifiers

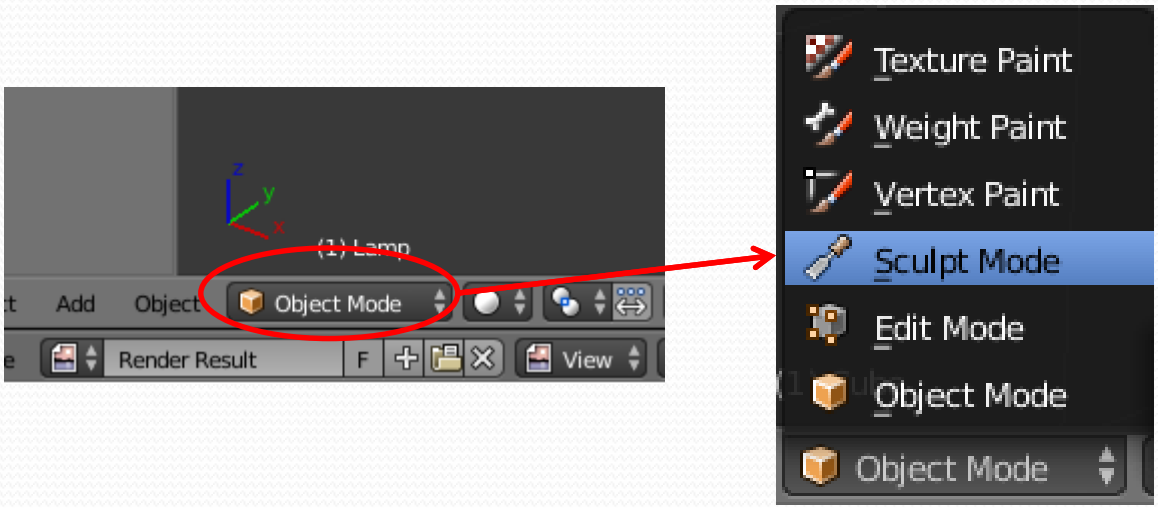
IV. Sculpting system

V. Curves, surfaces, freeform modeling
VI. Meta objects
VII. Background image
VIII. Procedural Description and physical simulation
IX. Photogrammetry and Image based Modeling
X. High and low polygon modeling

IV. Sculpting system

1. Blender Sculpt mode

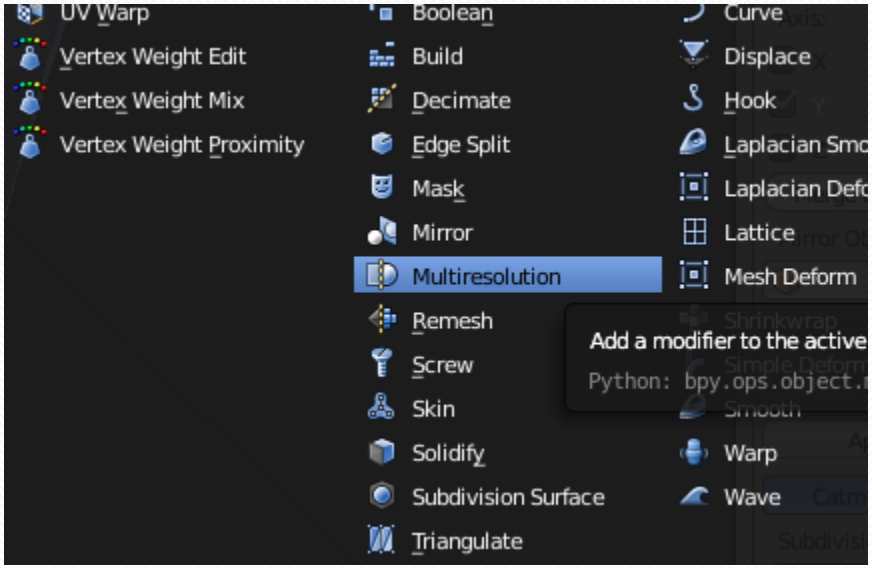
- Blender has a mode for sculpting called **Sculpt Mode**
- Sculpting works using a series of **brushes** that allows to manipulate the surface of meshes in different ways
- It creates **complex forms** from a simple mesh and even draw in fine details on the surface of the model
- To sculpt a model, it should have a **multiresolution modifier**



IV. Sculpting system

1. Blender Sculpt mode

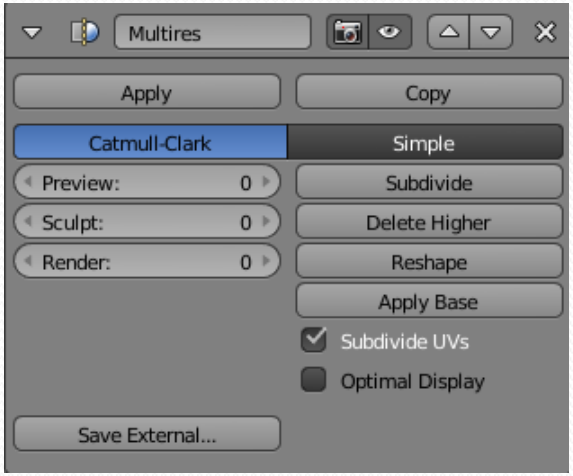
- Multiresolution modifier:
  - It subdivides the mesh
  - It allows to achieve higher levels of detail with cleaner, sharper results
  - It allows to manipulate the actual smoothed surface via the sculpting system while leaving the cage mesh intact
  - It is the basis behind the sculpting system in Blender



IV. Sculpting system

1. Blender Sculpt mode

- Multiresolution modifier's settings:
  - **Preview Setting** determines which level of subdivision is displayed in the Viewport while in Object Mode.
  - **Sculpt Setting** allows to select the level of subdivision to display while in Sculpt Mode.
  - **Subdivide Setting** allows subdividing the mesh, increasing the resolution and thus raising the amount of detail you may reach while sculpting.
  - **Delete Higher Setting** deletes any levels of division that are higher than the current level.



IV. Sculpting system

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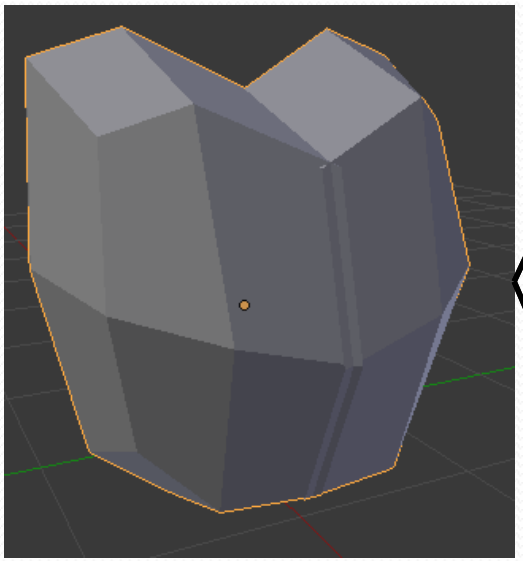
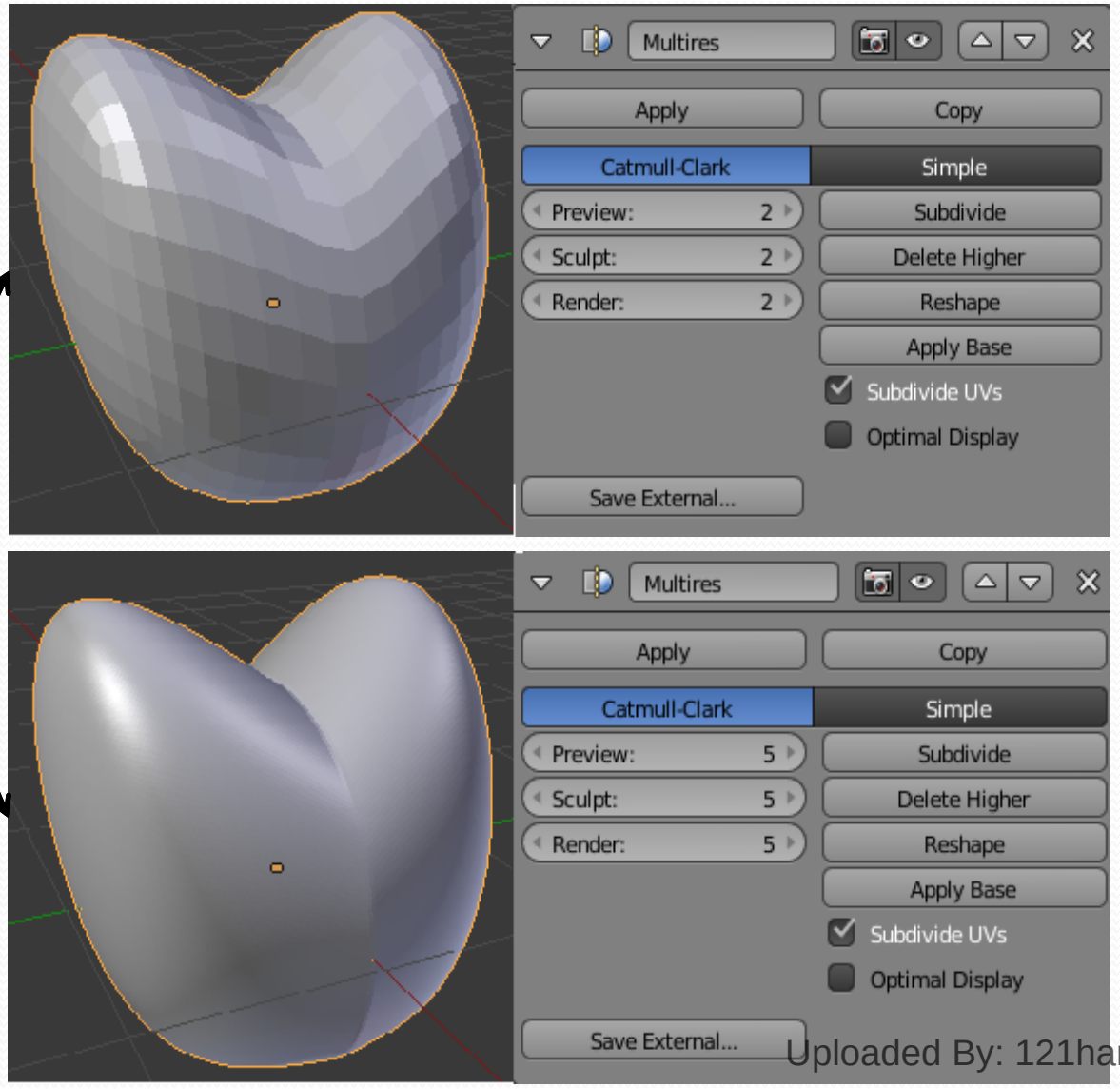




IV. Sculpting system

1. Blender Sculpt mode

- Sculpting Basics:

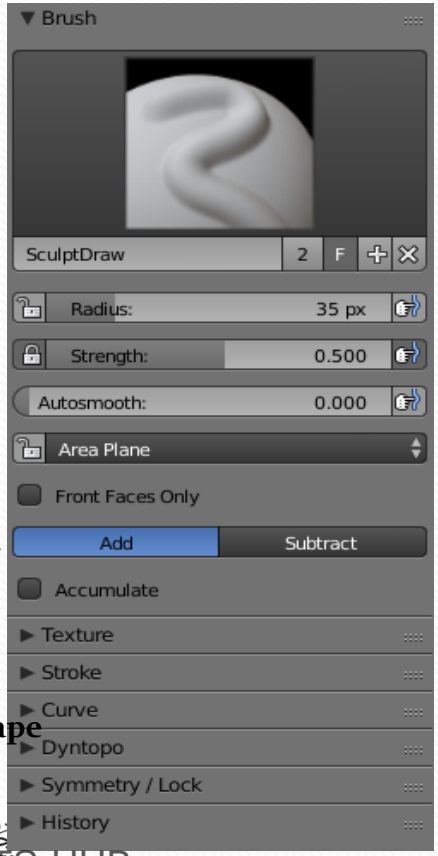
  All tools and settings for sculpt are located in the toolbar, obtained after pressing T key

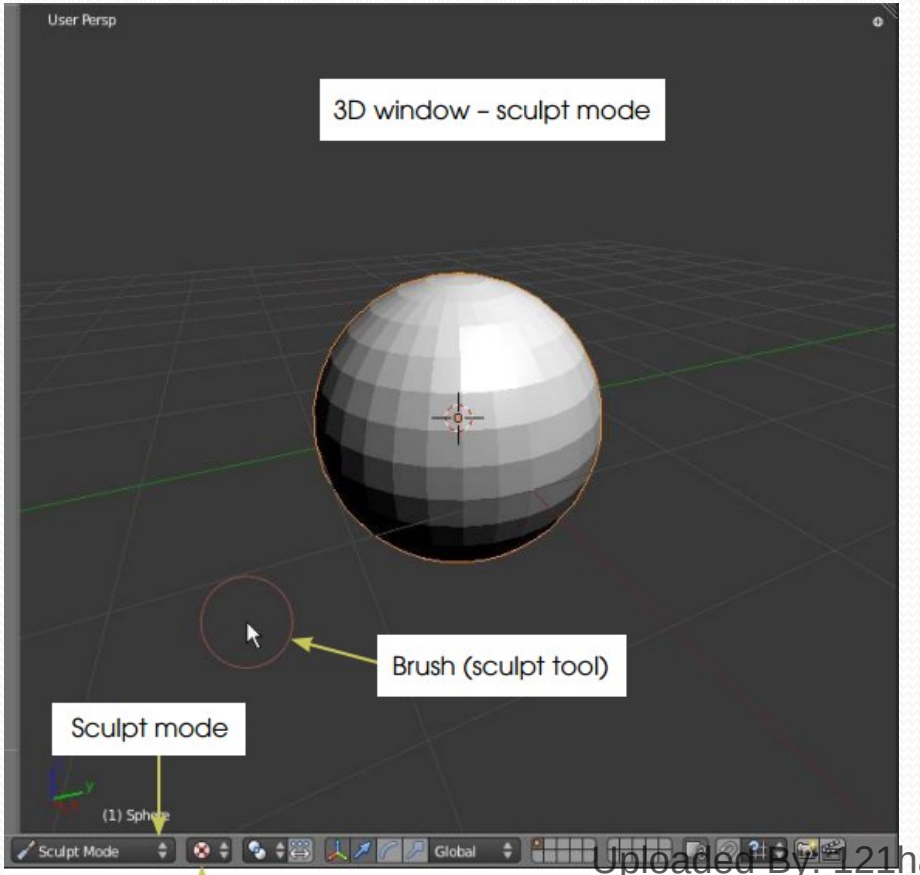
F Key

Shift +F Key

Ctrl Key

Brush tip shape



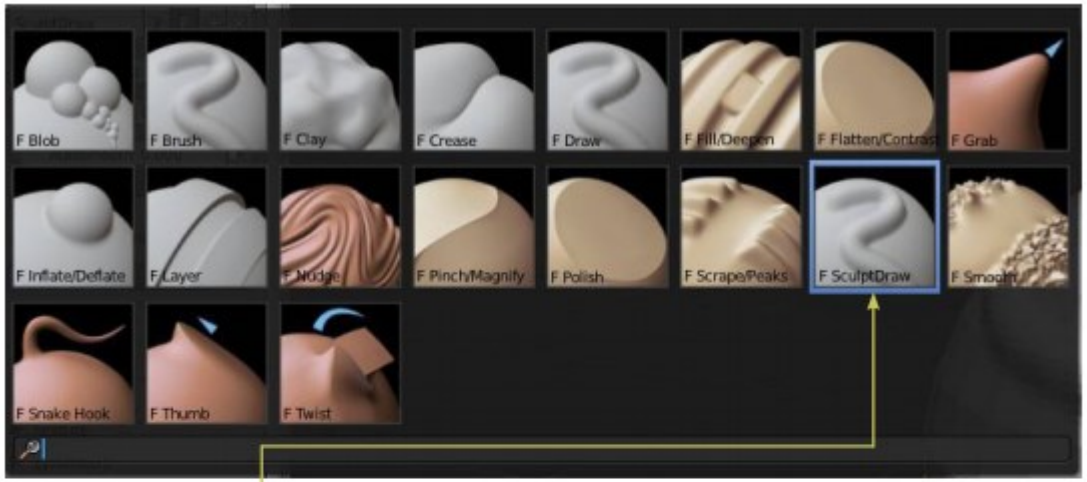


IV. Sculpting system

1. Blender Sculpt mode

- Sculpting Basics

  Brush Options



IV. Sculpting system

1. Blender Sculpt mode

Brush Type	Description
Drawing Brushes	
Sculpt/Draw	This brush pulls the mesh surface under the mouse pointer outward (using the Add option) or inward (using the Subtract option). This is the brush that is the best for drawing lines.
Layer	This brush works similarly to Draw, except that you define a height for the draw lines (the Add option raises the lines and the Subtract option deepens them). If you zig-zag a layer brush over a previous application of layer, it won't build up over the defined height.
Scrape/Peaks	This sinks ravines into or raises mounds on the surface.
Blob	This applies a buffing effect to an area.
Clay	This shrinks areas inward (using the Add option) or expands them (using the Subtract option) against a center point.
Fill/Deepen	This works like Draw, except that Fill targets the hollows in a surface, raising them up to fill them in; and Deepen makes sunken areas of a surface deeper.

IV. Sculpting system

1. Blender Sculpt mode

Surface-Shifting Brushes

Nudge	This pushes areas of the mesh along the surface.
Thumb	This generates a subtle rubbing effect. It has more of a digging effect than the Nudge tool.
Grab	This grabs hold of an area and moves it with the brush.
Snake Hook	This is similar to the Grab tool, but allows you to pull areas out in tentacle-like arcs.
Twist	This moves the surface area around in a spiral.

Expansive Brushes

Inflate/Deflate	Inflate expands an area in a balloonlike manner, whereas Deflate shrinks parts of a mesh.
Pinch/Magnify	Pinch pulls an area into the middle of the brush, and Magnify spreads the surface area outward.
Crease	The Add option pinches the mesh to make a peak, and the Subtract option creases the mesh inward like a valley.

IV. Sculpting system

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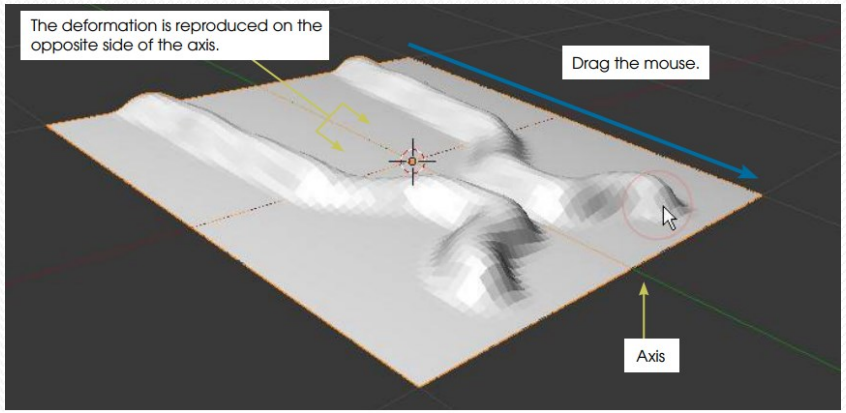
Brush Type	Description
Smoothing Brushes	
Smooth	This smoothes the surface of the mesh by evening out the vertices.
Polish	This smoothes areas of the mesh while trying to maintain the general shape.
Flatten/Contrast	Flatten flattens the area under the mouse pointer, whereas Contrast exaggerates the bumps.

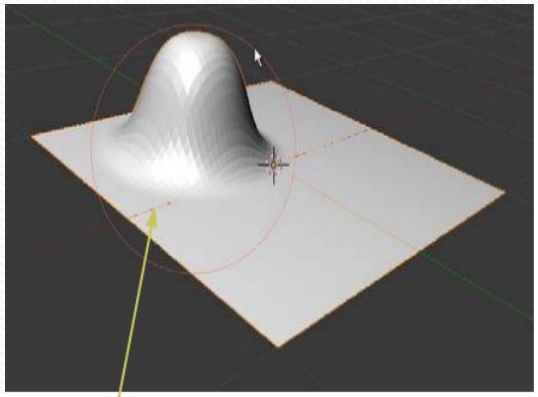
IV. Sculpting system

1. Blender Sculpt mode

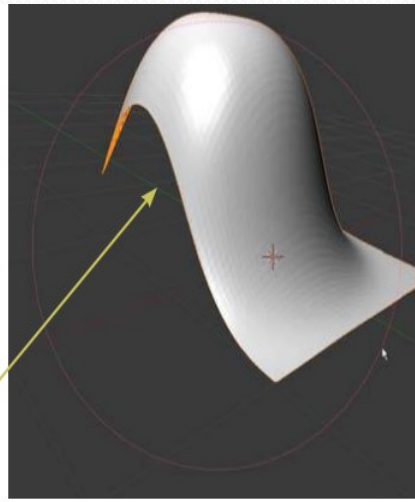
Mirror

Anchored



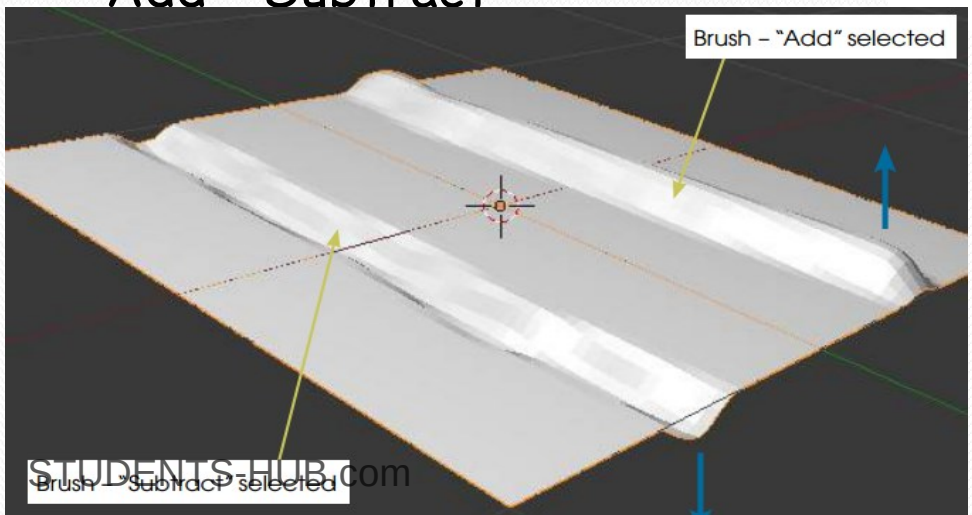


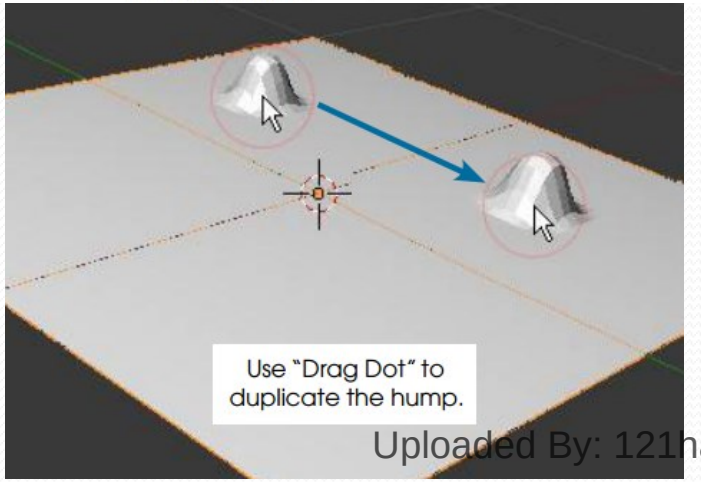
Anchored: click and drag the mouse to produce a hump



Continue dragging the mouse to deform the entire plane object.

Add - Subtract



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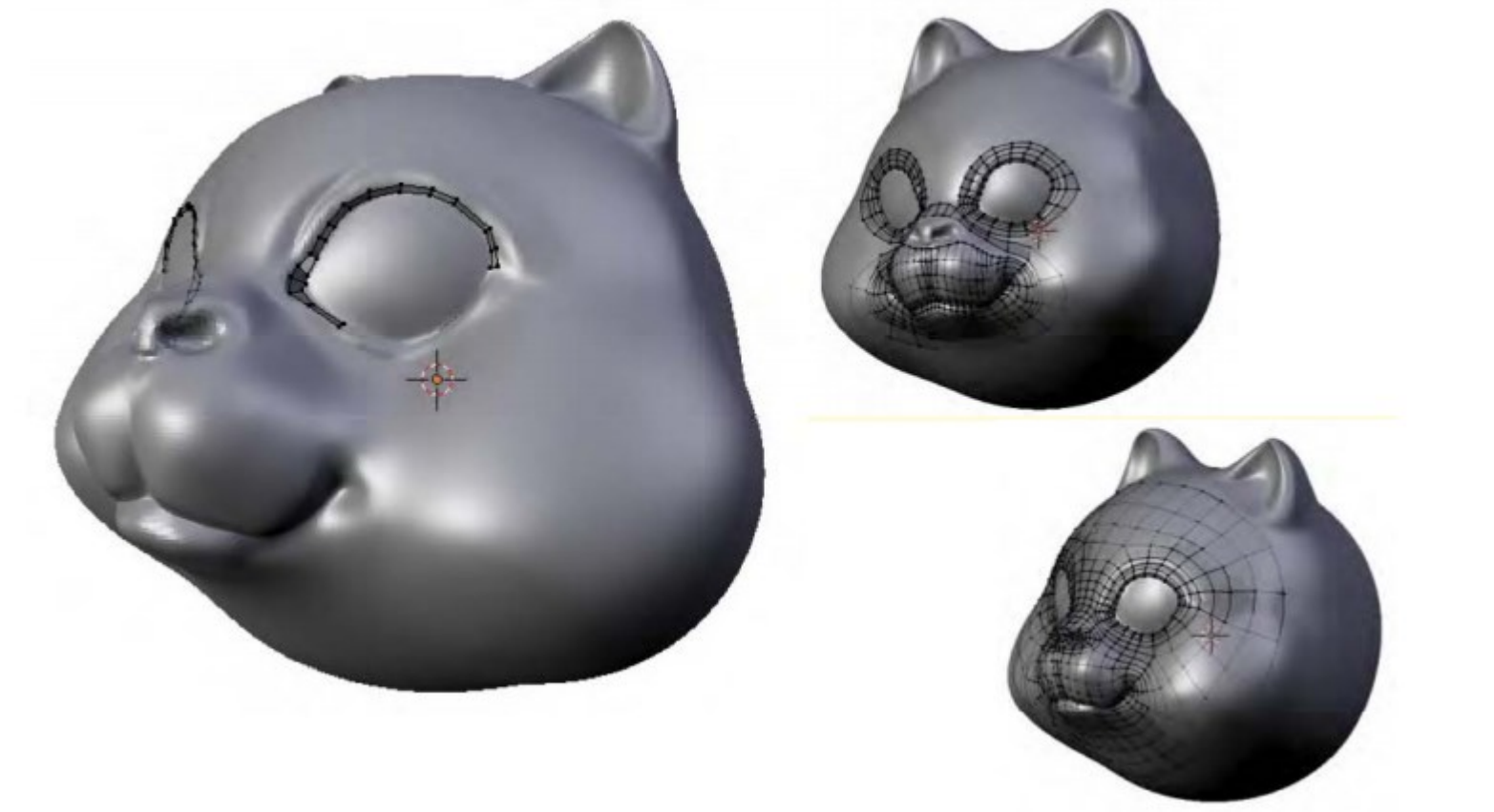
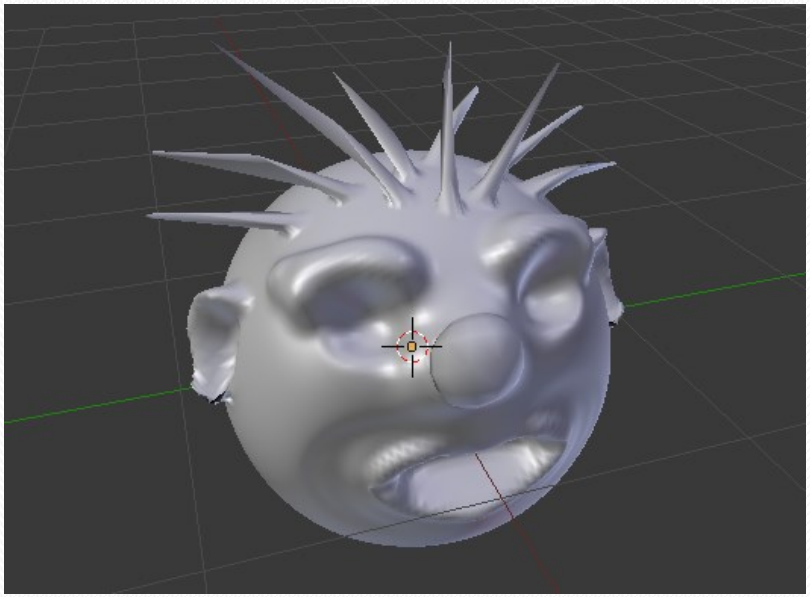
IV. Sculpting system

Retopology

- mold a new mesh around the sculpted original



Activity

Activity 2.14	**Title:** Model a low-poly character head
Type:	Individual activity- Home work
Goal:	Guide students to practice the sculpting tools ILOs I1 & P1 & P2
Outline:	Model a 3D realistic head using multiresolution modifier and Sculpting system. The obtained result should look like the following image: 
Timeline	One or two days
Assessment	Assess student's solution

Thank you for your attention!