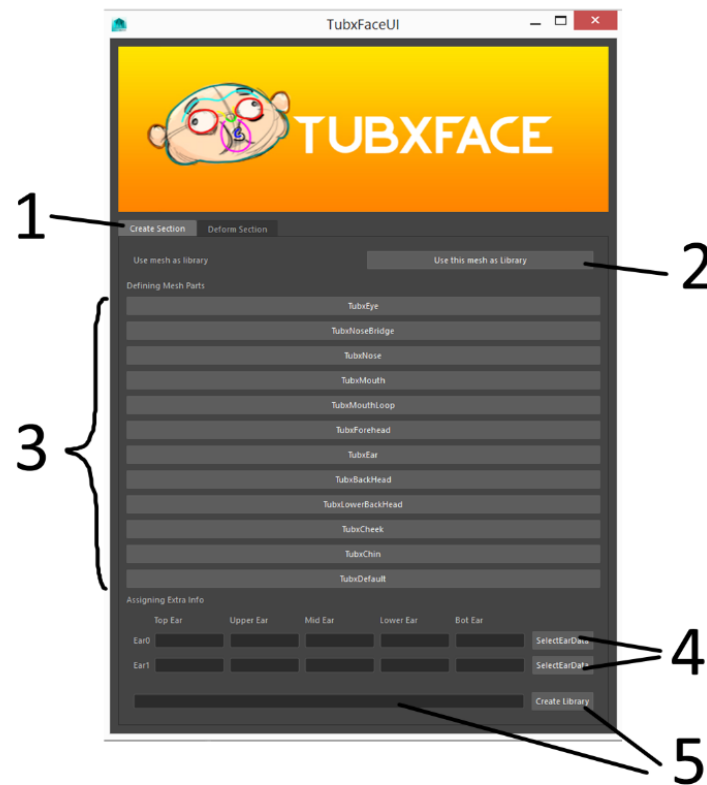**Chun You Sim**
**I7208422**
**TubxFace User Guide**

**UI Explaination**



1 – The tabs to switch between the create section and the deform section
2 – The button to click on when you want to create a library using a selected mesh
3 – The buttons to click on when you are associating the selected faces to a certain body part
4 – The button to click on to associate the ear data
5 – Type the saving name in the line and click on the button to create the library
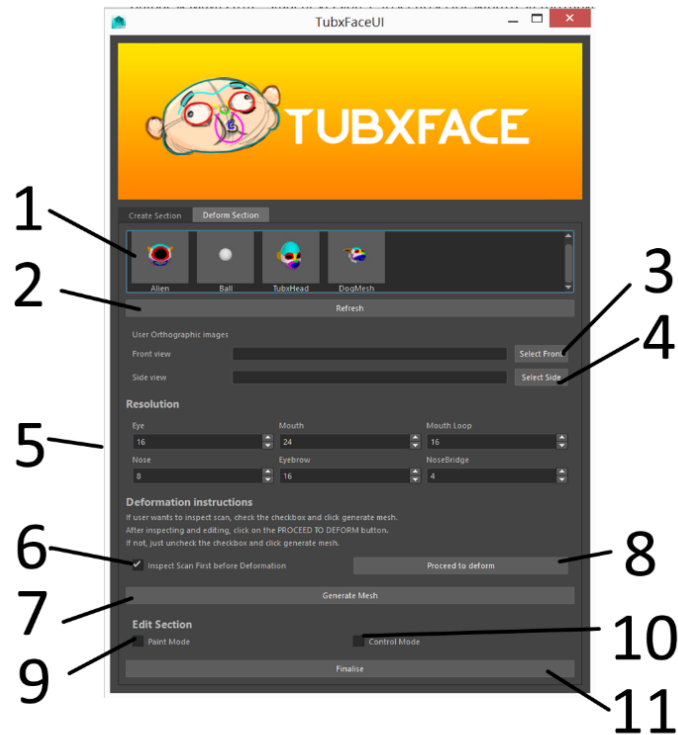
1) The library meshes available

2) To refresh the library

3) Click on this button to choose the front view image

4) Click on this button to choose the side view image

5) The point resolution of the control curves and the detected points. (NOTE: Higher resolution does not mean better results. It is an option to accommodate both low and high poly meshes)

6) Allows the user to inspect the scanned data first and adjust it if they would like before letting the controls deform to the points

7) The button is always clicked first before (8). It starts importing the mesh and creating the scan data

8) If (6) is ticked, after inspecting the mesh, click on this button to let the controls deform to the points

9) Paint Mode uses Maya artPutty context to modify the geometry

10) Control Mode uses guide curves and separate the geometry to its individual parts to allow modification of geometry

11) Finalise the creation process. Data would be cleaned up and program would exit.
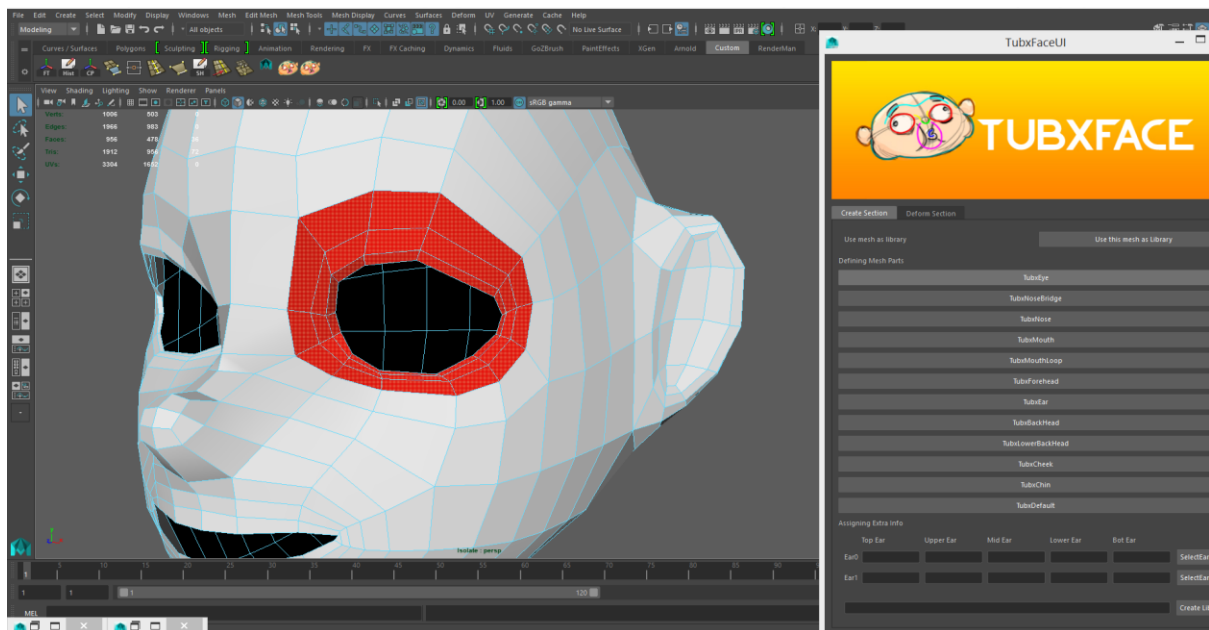
## Creation Process

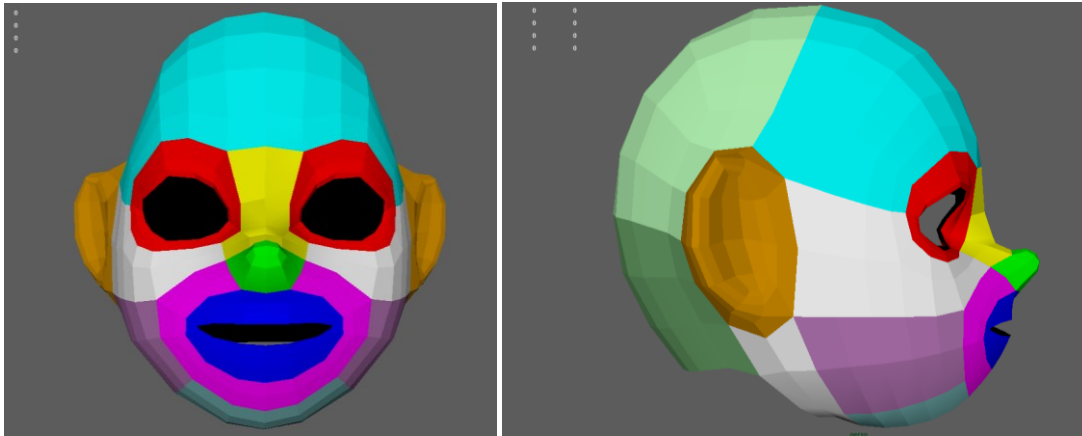1) The mesh to create the library with should be facing down the Z axis as shown in the diagram
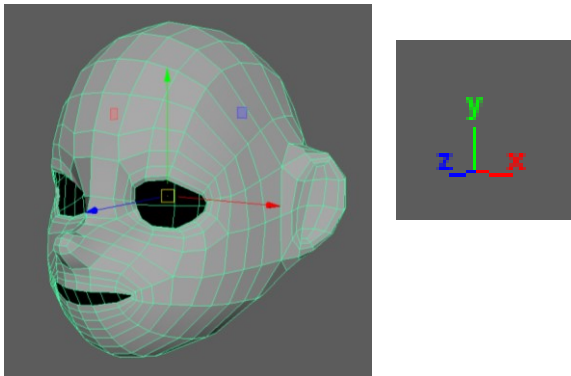


2) Click on the mesh, open the tool and click on the "Use this mesh as Library" button. This would cause the mesh to turn white and isolate the mesh.

3) Select faces on the mesh that represents each of the parts and click on the appropriate buttons.

4) Do note of the program's current constraints.
- Both the eyes and the mouth must have a hole in the middle and not connected.
- If there is an eye and a nose bridge, it must be connected to a forehead as a head must have a forehead.
- If there is a nose, there must be a nose bridge, and vice –versa.
- If there is a part missing, for example the character has no nose, have a TubxDefault, or a white region applied in between the parts as shown in the picture below
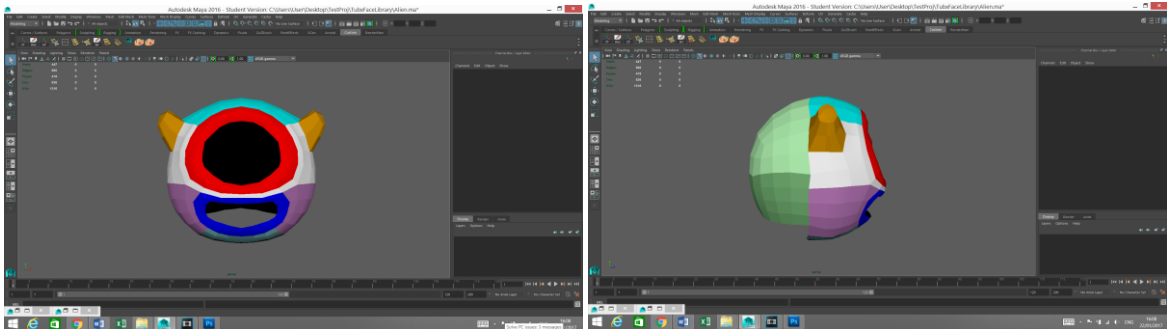


- The forehead, cheek and chin mesh must be a square and cannot be irregularly shape for now.
- The back edge of the forehead, chin and cheek represents the front profile.
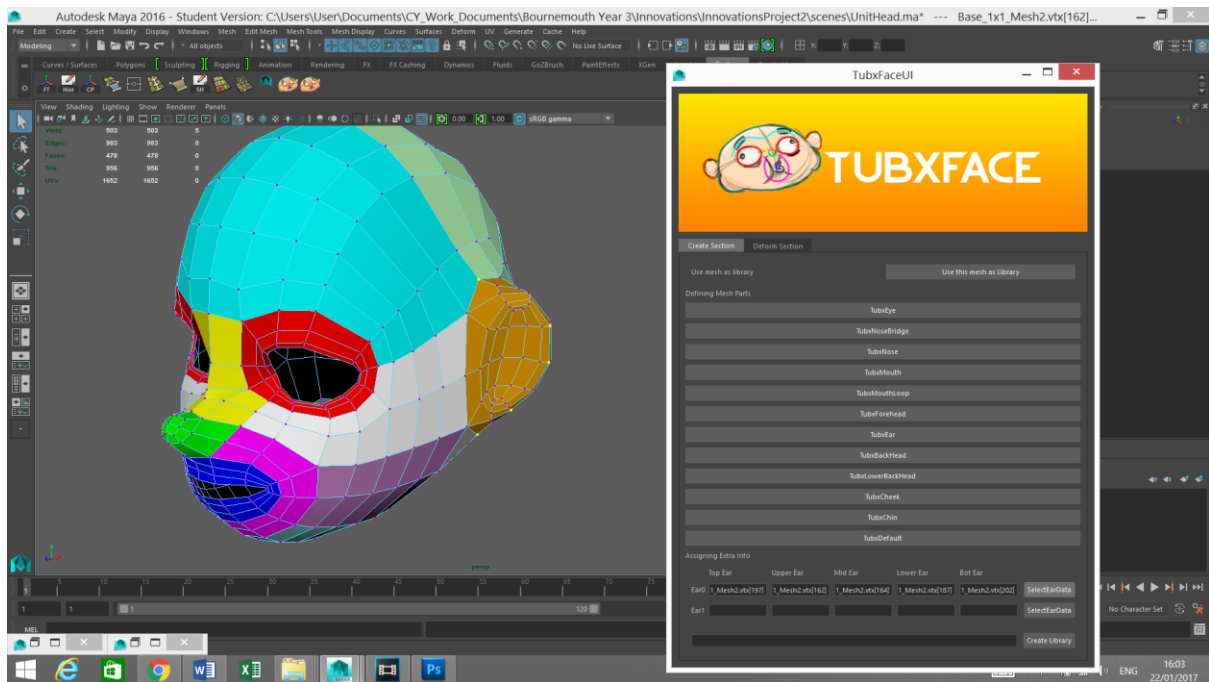
5) To assign ear data, starting from the left ear of the geometry as shown in the image, start clicking a vertex that best represents the part of the ear in this order:
TOP EAR -> UPPER EAR -> MID EAR -> LOWER EAR -> BOTTOM EAR
And click on the "SelectEarData" button.

Currently the program only allows for 2 ear but the code could allow for more. This is a future implementation.

6) Type the desired name to save the file and click on the button "Create Library"
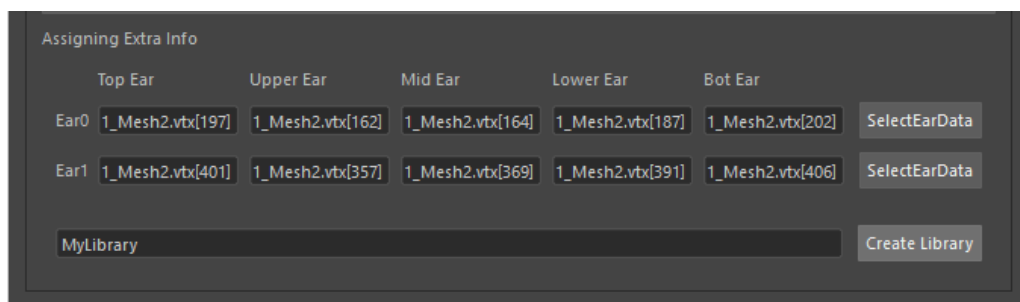
**Drawing Process**
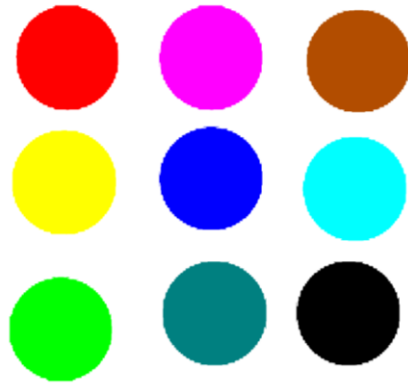


A colour chart is provided which represents the colours of the guide curves for different parts of the mesh. It can be found in **Submission folder > sourceimages > ColourPalette.png**

The colours are:
Red [255,0,0] – Eyes
Yellow [255,255,0] – Nose Bridge
Green [0,255,0] – Nose
Magenta [255,0,255] – Mouth Loop
Blue [0,0,255] – Mouth
Blueish Green [0,128,128] – Front Profile
Brown [178,77,0] – Ears
Cyan [0,255,255] – Eyebrow
Black [0,0,0] – Side Profile

1) Create a good file size. 1024x1024 pixels is a good option.
1) Draw the front view using the colours provided at areas that represents the various mesh parts
2) Please use a hard brush for a more controlled result
3) The side view image for each mesh part has to be slightly longer to ensure the front view image has enough side view images to detect the corresponding Z value.
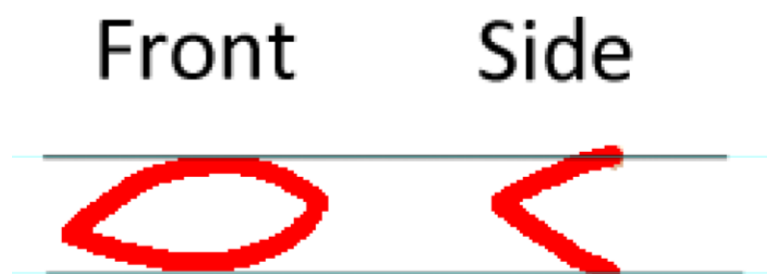


4) Due to the current algorithm, looping lines on the side view are not supported

5) Another constraint is the front profile. One of the ends of the front profile in the side view should be the furthest back of the head as that is used as a common point for detection purposes. As you can see from the picture below, the starting point of the front profile of the right head is the furthest back point. The left head has its front profile start off at a point and curved even more backwards. This would cause problems with the algorithm.
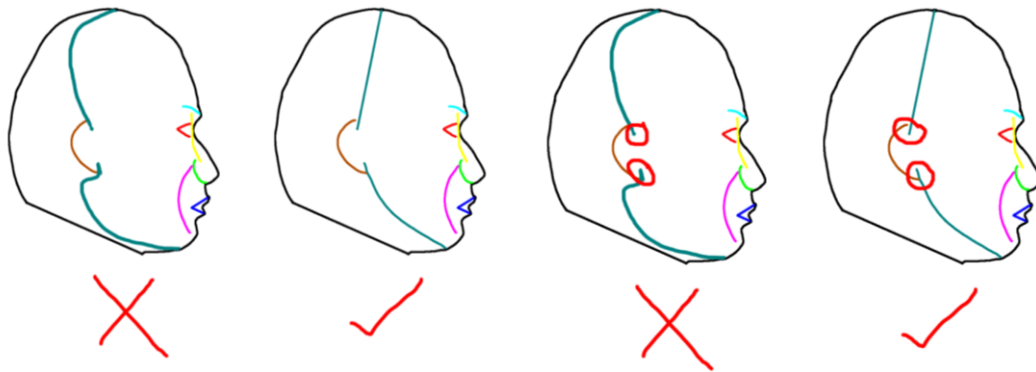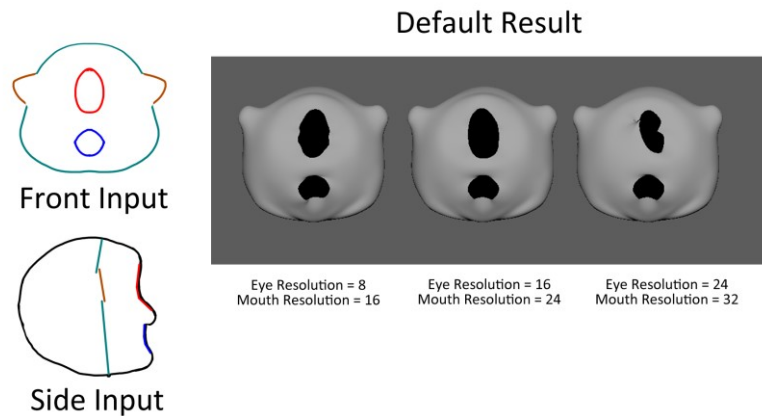


6) Once you are happy with the drawing, save it out. A .png file is the preferred format.
Here are some references for you
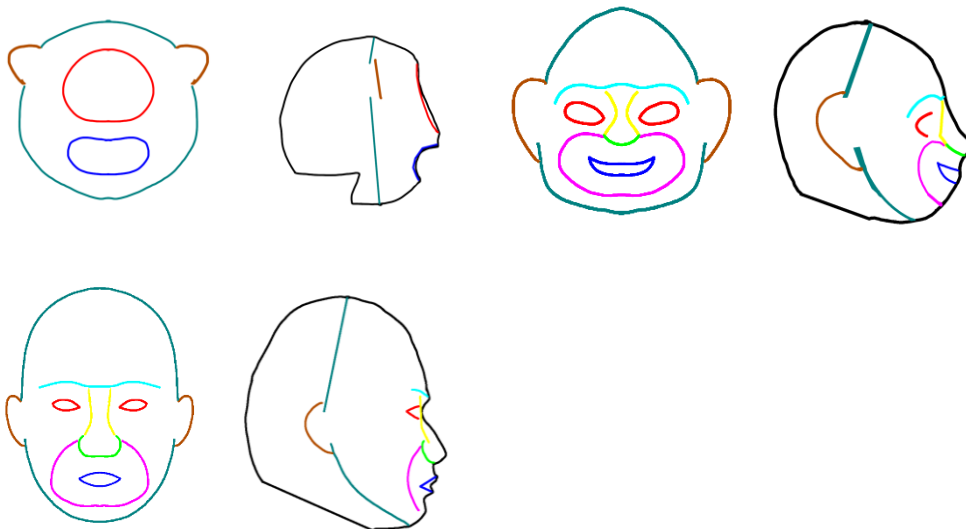


**Deformation Process**

1) In the "Deform Section" tab, select the library mesh that best resembles your drawing
2) Load the front view image by clicking on the "Select Front" button
3) Load the side view image by clicking on the "Select Side" button
4) The resolution option specify how many control and deformation points to create for that particular mesh part. It is to allow for the program to accommodate low and high poly library meshes. An example of how too high a resolution may not work and too low will not suffice is shown below.

Default Result

Front Input

Side Input

Eye Resolution = 8          Eye Resolution = 16          Eye Resolution = 24
Mouth Resolution = 16       Mouth Resolution = 24        Mouth Resolution = 32

5) Check or uncheck the "Inspect Scan First before Deformation" checkbox.
If checked, this allows you to see the 3D scan of your drawing first before deformation. You can correct the scan points by moving the locators in 3D space. An example that would need this option is included in the submission that creates the dog mesh. This is because the side view of the dog mesh's mouth is looped which is indicated that the program could not support. You could correct this scan by moving the mouth locators of the dog mesh.
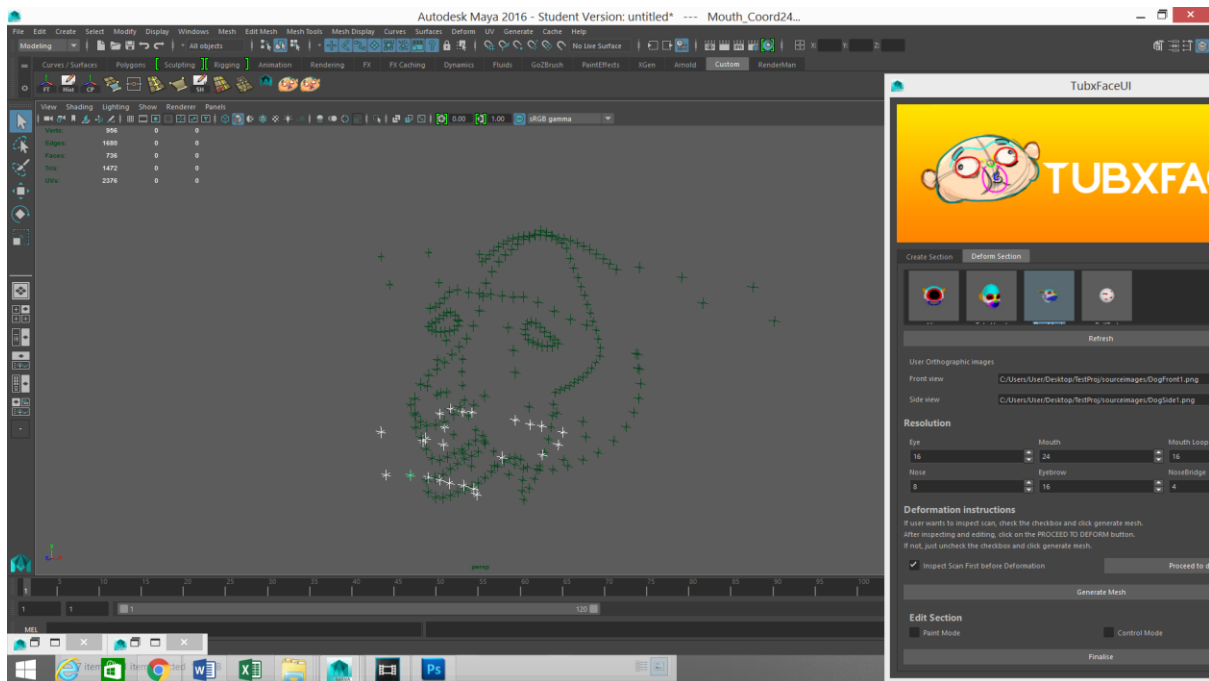


6) After checking or unchecking the "Inspect Scan First before Deformation" checkbox, click on the "Generate Mesh" button.
If the check box is ticked, after adjusting the locators, click on the "Proceed to deform" button
If the check box is unticked, the program will automatically proceed to deform.

7) When the mesh is generated, you are given the option to edit
Click on the paint mode to activate Maya's sculpt geometry tool
Click on the control mode to activate TubxFace control mode. This will split your mesh into parts and a new window would open. That window isolates only curves so you can edit the curves in the separate window while looking at the mesh deform.

8) Once you are happy with the deformation, click the "Finalise" button to clean up and exit the program.