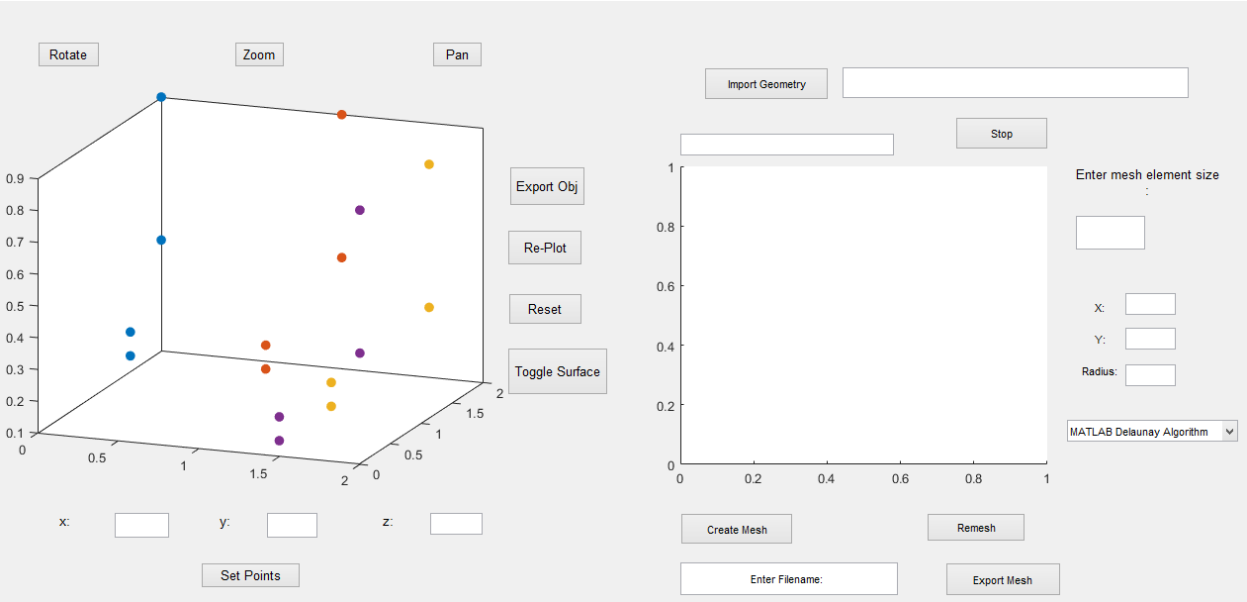
User Guide

Fig. 1 (complete GUI layout)



1. Bezier Surface Creation:

Steps for generating surface

Step1: Select control points

1. click on the control point whose position you would like to change
2. Once selected input its new coordinates in the x y and z fields
3. click Set point

Step2: Select Replot to see point change

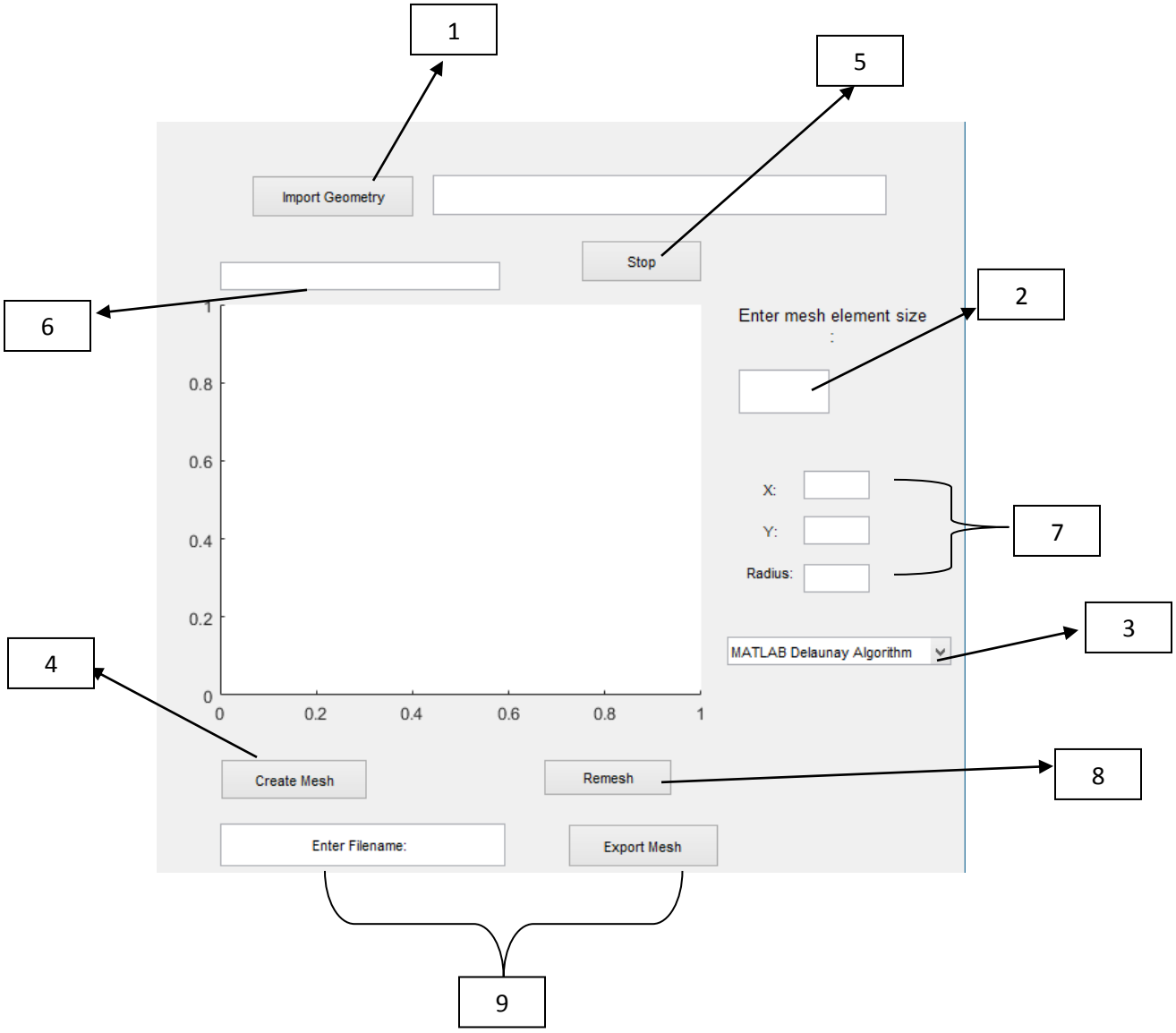
Step3: Select Toggle Surface to see the resulting surface

Step4: Select Toggle Surface to turn off surface to edit more points using steps above

Step5: Once final surface is achieved select export to export the surface to obj

*To view different angles of the surface in the viewing window the user can select rotate pan and zoom for each action

2. Mesh Generator



Step1: Click on import geometry button **[1]** to import geometry in OBJ file. When you click on the button, a file browser will pop up. You can use the file browser to import the surface file. The file should in the current working directory.

Step2: Enter the mesh element size in the box **[2].** This is the desired length of the edge of triangular mesh.

Step3: Select the algorithm to use for generating Delaunay triangles. It is very important to go to the list-box **[3]** and ***click*** on the algorithm as MATLAB doesn't give option to set Default algorithm. (Important: The algorithm that is displayed in the list box is not the default algorithm).

Step4: Click on Create Mesh button **[4]** to create mesh. The mesh keeps on optimizing till 1000 iterations. There is a text box **[6]**, that displays the status of the mesh. The text box will display 'Optimizing Mesh…', if the 1000 iteration are not over. If the 1000 iteration are over, it displays – 'Mesh Optimized'. If the user feels that the mesh is optimized and he wants to stop the iterations, he can click on the stop button **[5]**, to stop the iterations.

Step5(optional): The GUI has a functionality to create local fine or coarse mesh. If a user feels that he wants a mesh of different size at particular region, he can specify the X, Y and the radius **[7],** to define a circular region where he wants to remesh. Change the size of the element for remesh. After that click on the Remesh Button **[8].** (Important: Click on Remesh button and not on Mesh button)

Step6: After the meshing operations are completed, specify a file name and click on Export Mesh Button **[9]** to export the mesh in OBJ format. The OBJ file will be saved in the current working directory. This file can be opened in any standard OBJ viewer.