Geometric Modelling (CSCI-GA 3033-018) - Assignment 5

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1 Answers to Exercises

I have tried to document the code so as to explain the logic of each function. All the code is inside the jupyter notebook Assignment 5. In the rest of the document I have uploaded the results for four different deformation of the meshes. In each figure I show the smooth filtered mesh obtained from the original undeformed mesh (top left sub figure). In the second figure (top middle sub figure), the deformed mesh based on user input is shown. In the third figure (top right sub figure), the smooth deformed mesh obtained after solving the optimization problem is shown. Finally (the bottom sub figure) the reconstructed deformed mesh is shown.
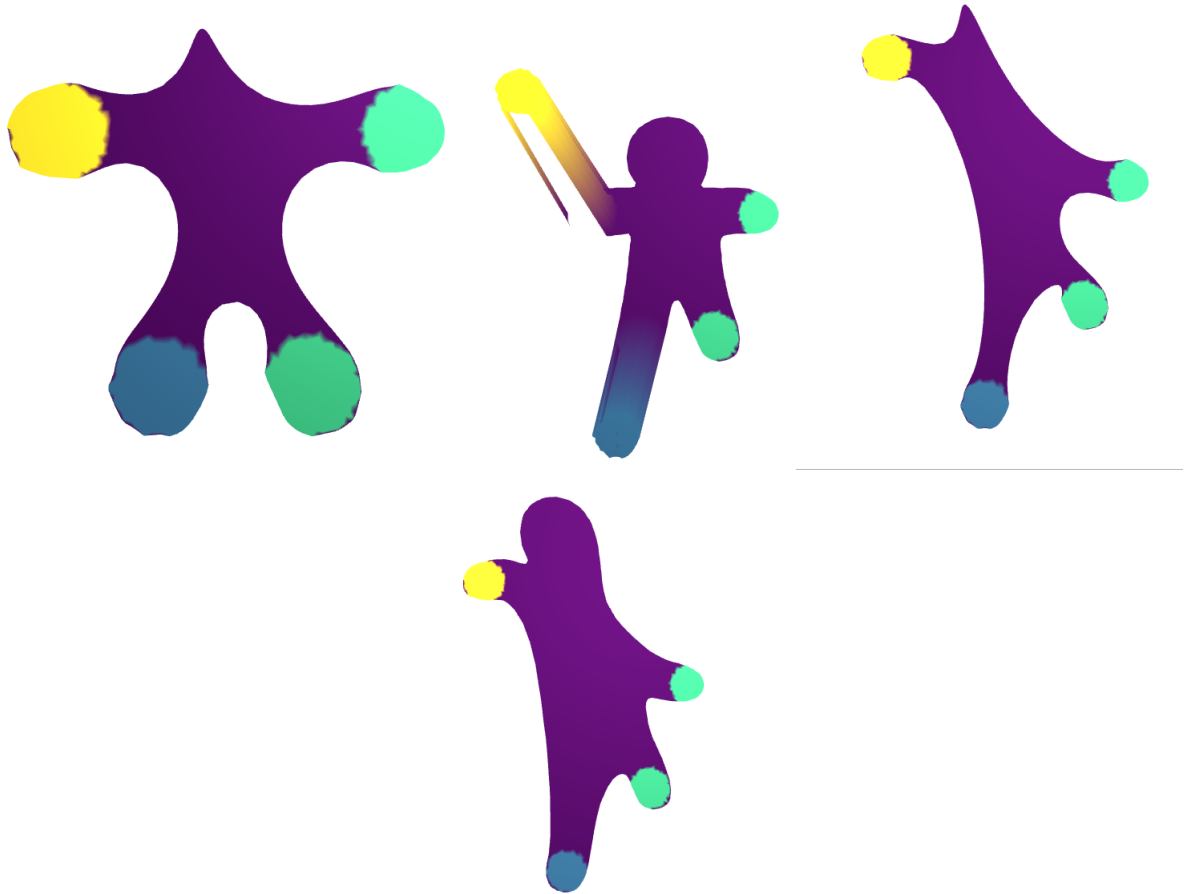
Figure 1: woody-fi mesh. The top left is the smooth mesh with no high frequency features of the original mesh. The second is the deformed original mesh based on user input. The top right most figure is the smooth mesh that is deformed without high frequency features. The bottom mesh is the reconstructed mesh
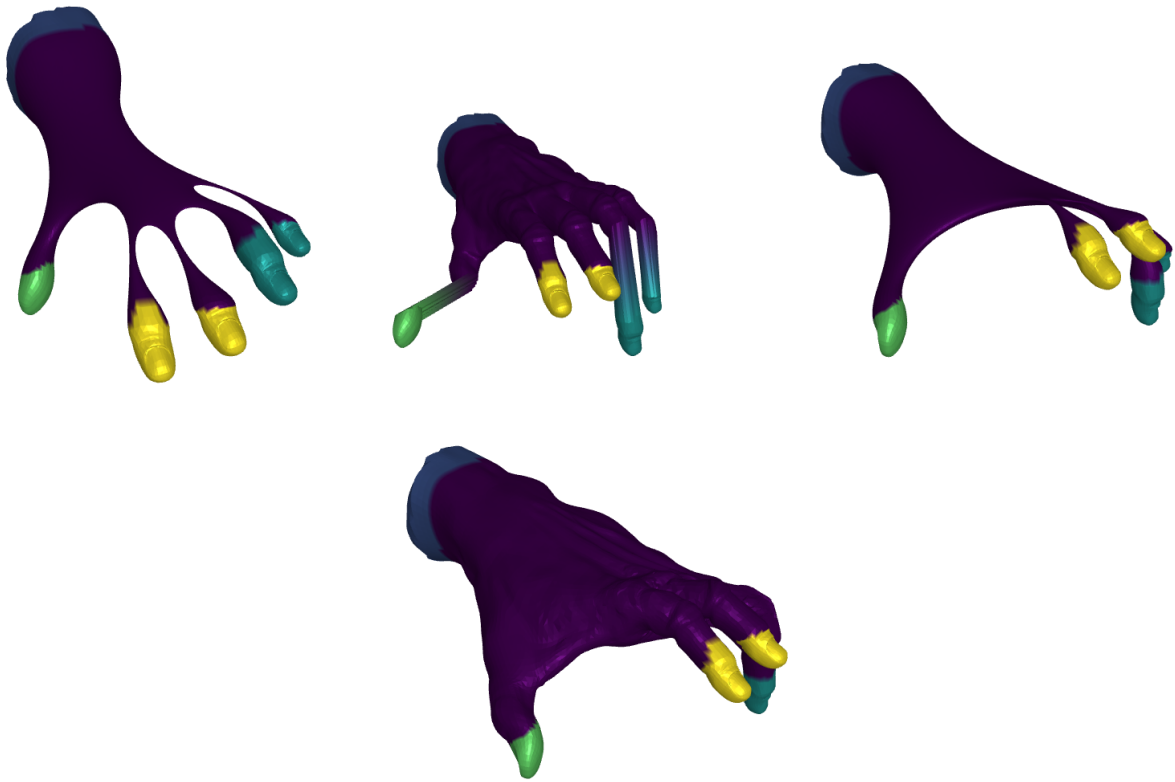
Figure 2: hand mesh. The top left is the smooth mesh with no high frequency features of the original mesh. The second is the deformed original mesh based on user input. The top right most figure is the smooth mesh that is deformed without high frequency features. The bottom mesh is the reconstructed mesh
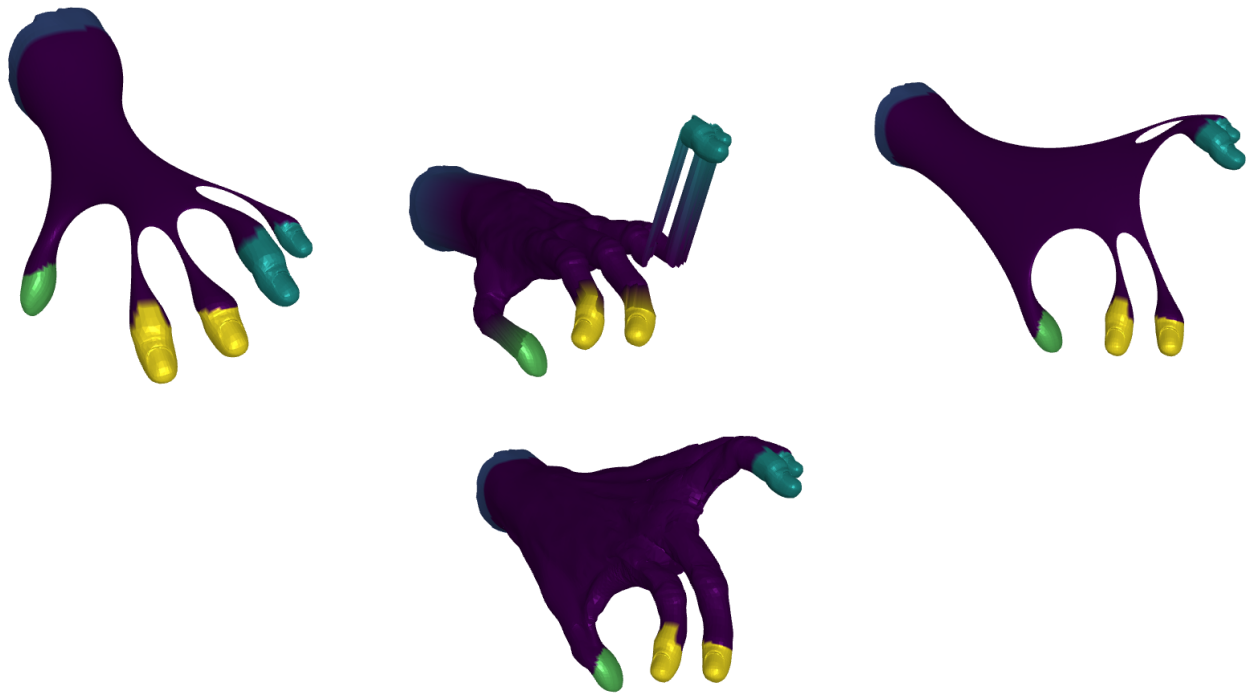
Figure 3: A more extreme deformation of the hand mesh. The top left is the smooth mesh with no high frequency features of the original mesh. The second is the deformed original mesh based on user input. The top right most figure is the smooth mesh that is deformed without high frequency features. The bottom mesh is the reconstructed mesh
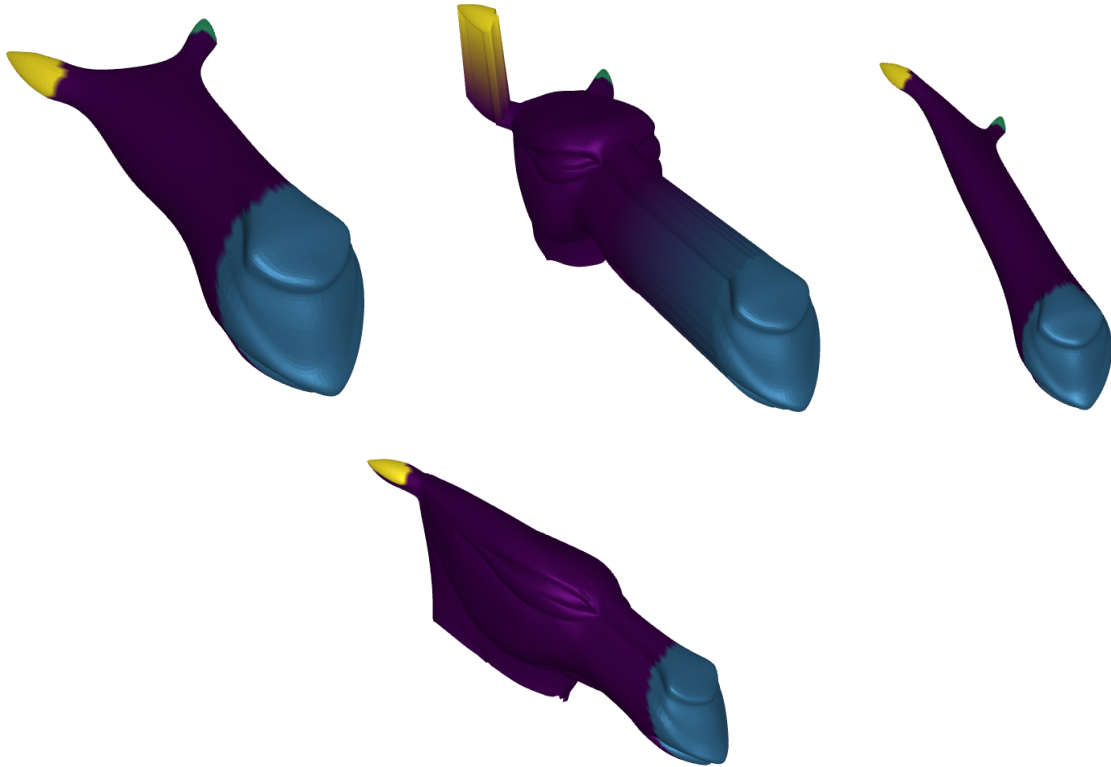
Figure 4: camel mesh. The top left is the smooth mesh with no high frequency features of the original mesh. The second is the deformed original mesh based on user input. The top right most figure is the smooth mesh that is deformed without high frequency features. The bottom mesh is the reconstructed mesh