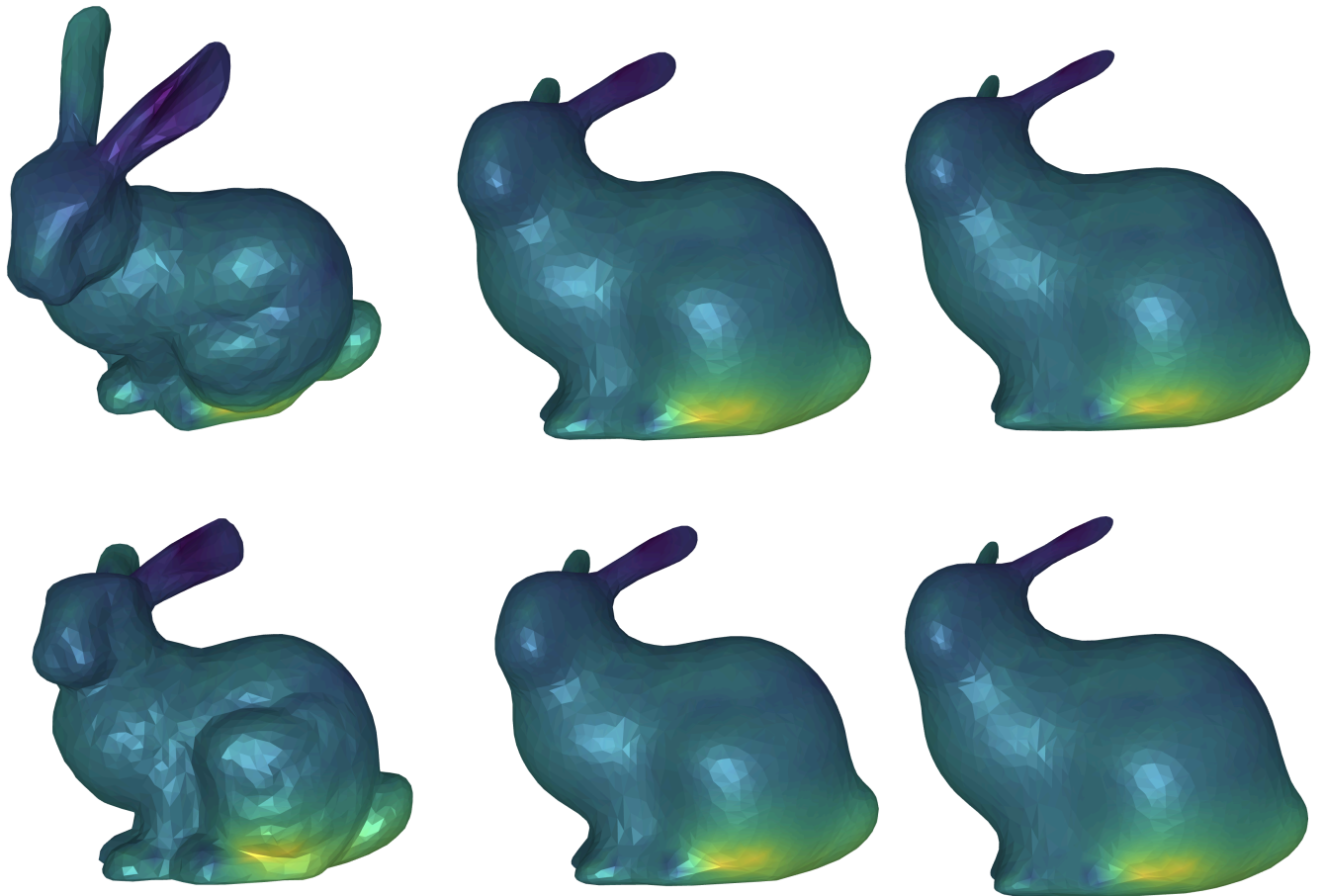


These are the plot for heat equation with one vertex = 10 and all the other set to 1:  
I had to change my code in one line; inorder to calculate the  $A_n$ , I accidentally used used  
inverse of eigenfunctions instead i should have ( $A_0 = \text{np.dot}(u, \text{eig}_f)$ )



These(first row) are the plots with the mass matrix from igl and the second row is my  
implementation of the mass matrix. They don't have much difference



I fixed the bonus part singularity problem. calculated the laplacian cotangent at each iteration again as you suggested and it worked.

