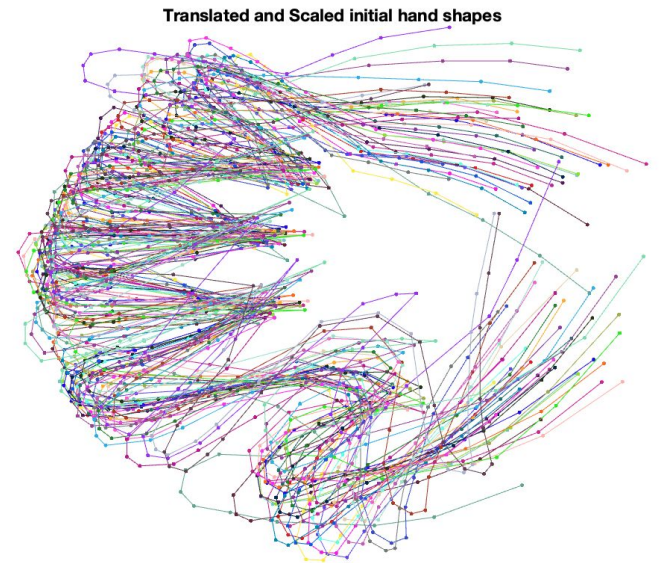
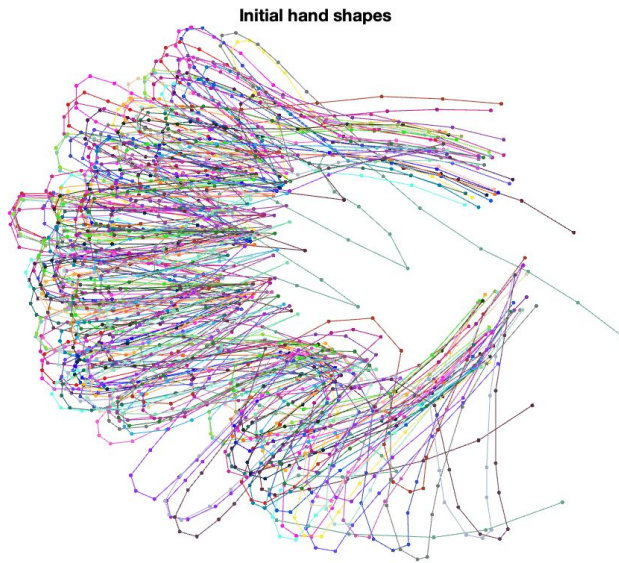


Medical Image Computing

Assignment 3

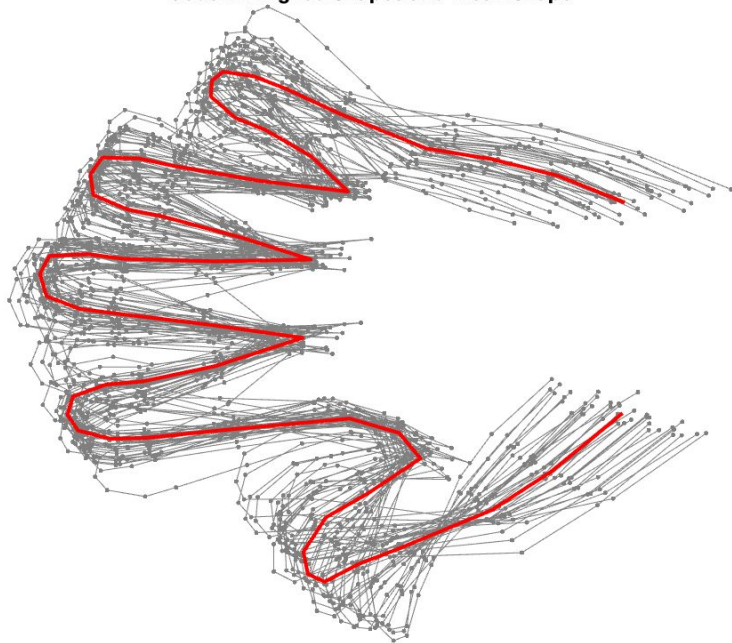
Shreyas Grampurohit (21D070029)
Soham Nivargi (21D070074)

Q1 - Shape Analysis on Human Hand Shapes

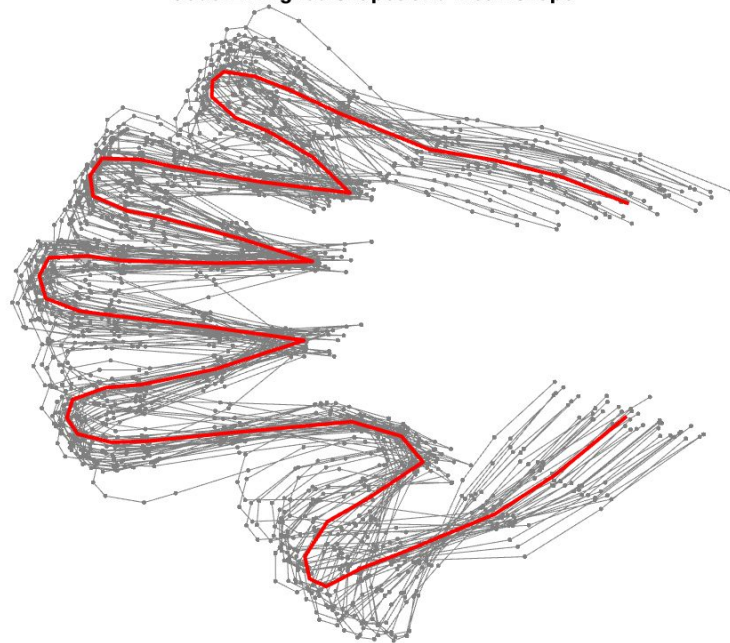


Shape mean + Aligned Pointsets

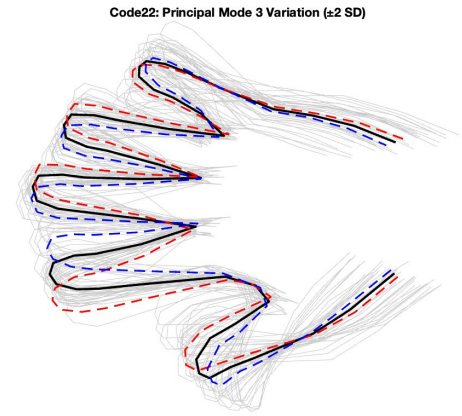
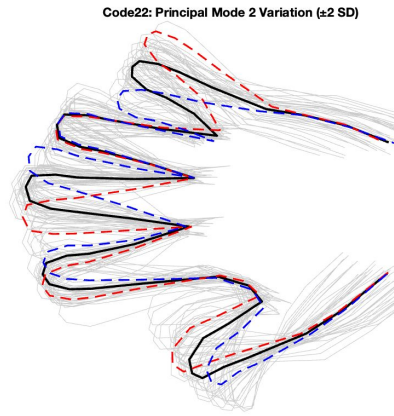
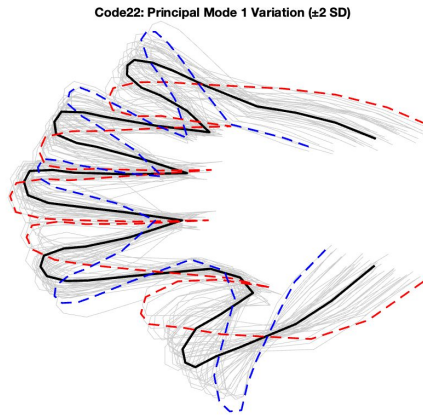
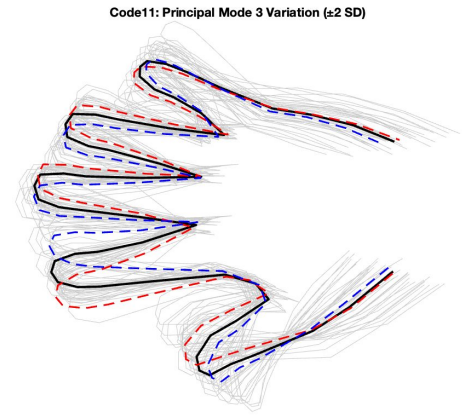
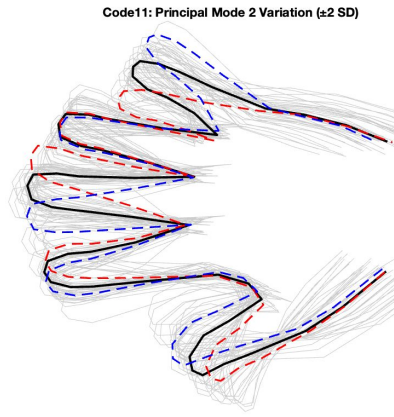
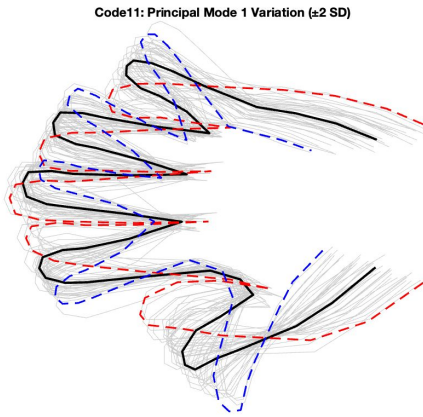
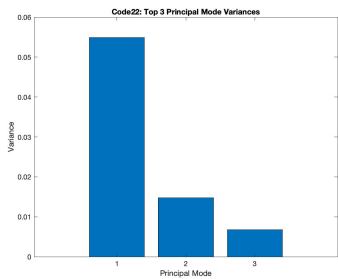
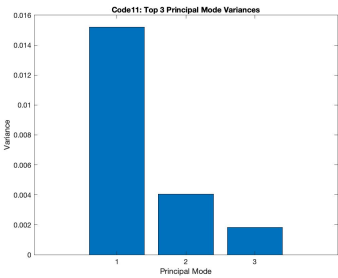
Code11: Aligned Shapes and Mean Shape



Code22: Aligned Shapes and Mean Shape

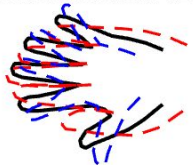


Principal modes



Shape mean + Aligned Pointsets + Principal Modes

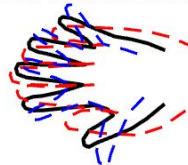
Code11 1st Mode $\pm 2\sigma$



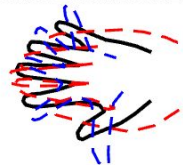
Code11 1st Mode $\pm 3\sigma$



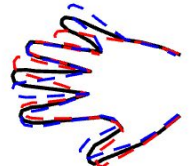
Code 22 1st Mode $\pm 2\sigma$



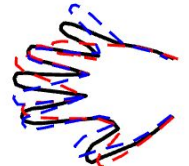
Code 22 1st Mode $\pm 3\sigma$



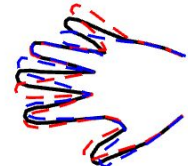
Code11 2nd Mode $\pm 2\sigma$



Code11 2nd Mode $\pm 3\sigma$



Code 22 2nd Mode $\pm 2\sigma$



Code 22 2nd Mode $\pm 3\sigma$



Code11 3rd Mode $\pm 2\sigma$



Code11 3rd Mode $\pm 3\sigma$



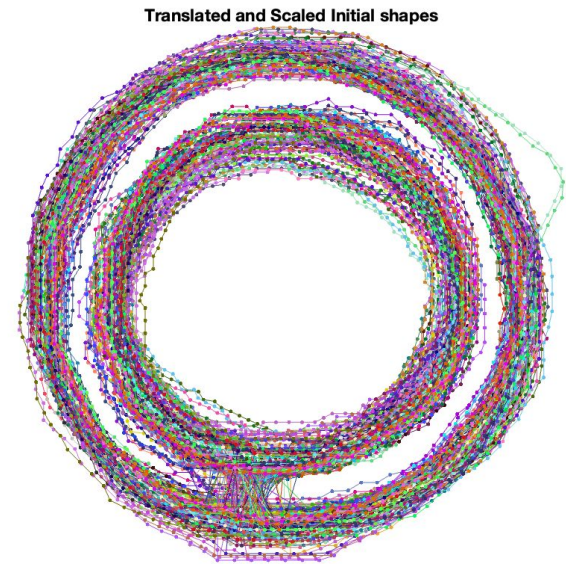
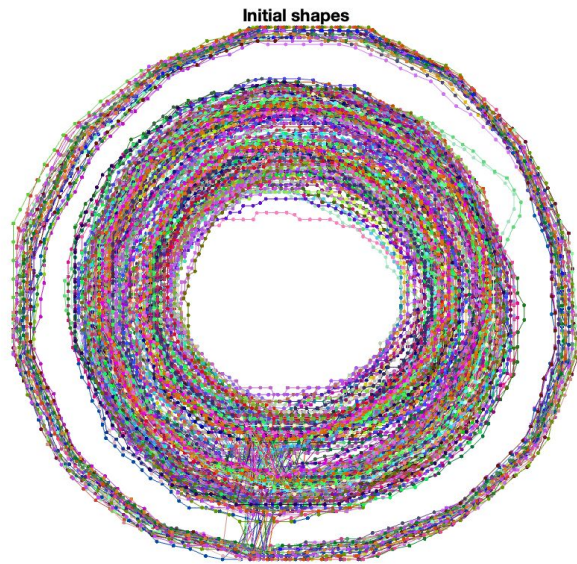
Code 22 3rd Mode $\pm 2\sigma$



Code 22 3rd Mode $\pm 3\sigma$

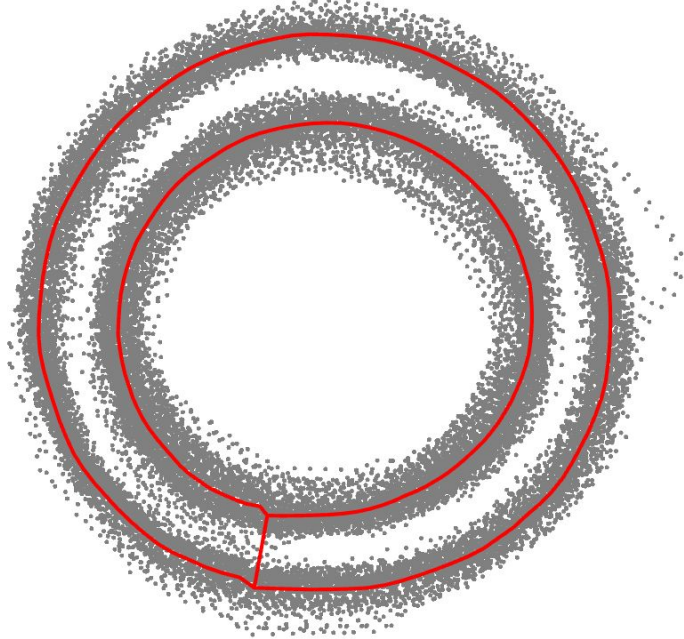


Q2 - Shape Analysis on Human Cardiac Shapes

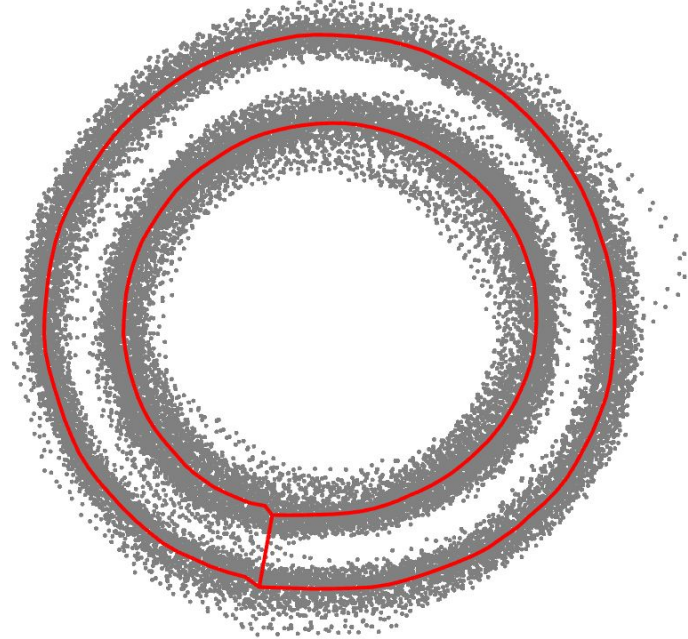


Shape mean + Aligned Pointsets

Code11: Aligned Shapes and Mean Shape

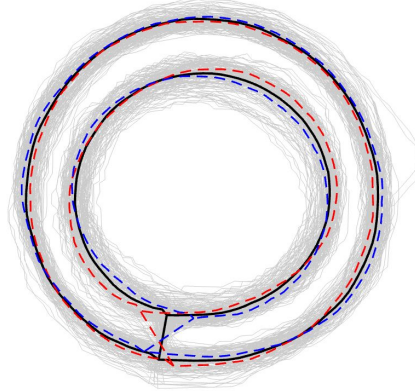


Code22: Aligned Shapes and Mean Shape

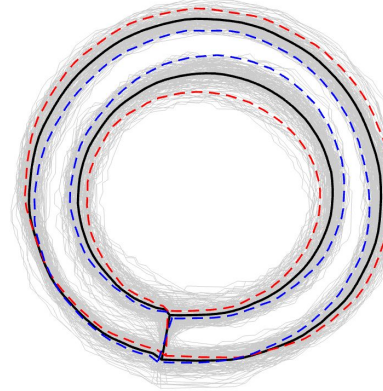


Principal modes

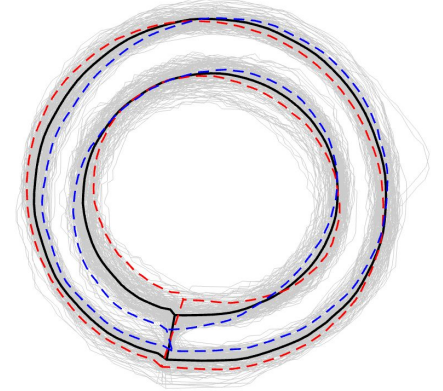
Code11: Principal Mode 1 Variation (± 2 SD)



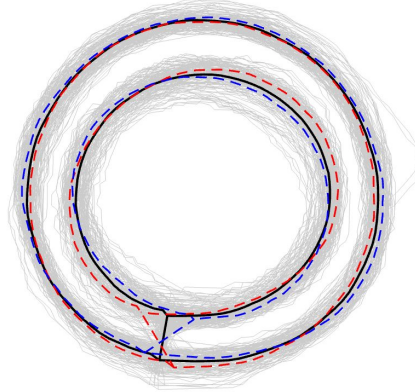
Code11: Principal Mode 2 Variation (± 2 SD)



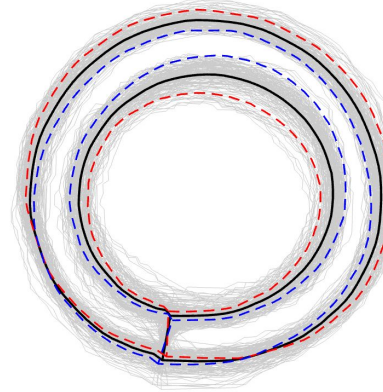
Code11: Principal Mode 3 Variation (± 2 SD)



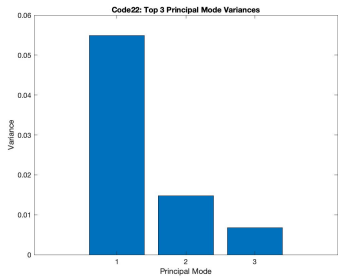
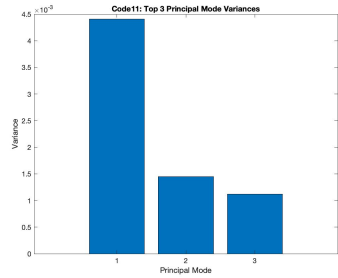
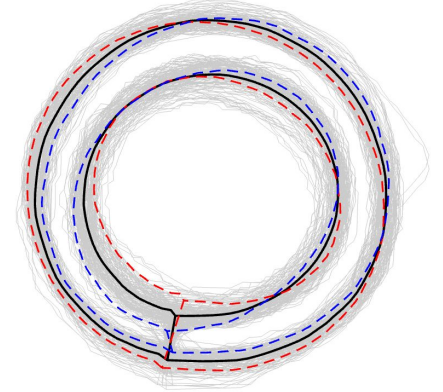
Code22: Principal Mode 1 Variation (± 2 SD)



Code22: Principal Mode 2 Variation (± 2 SD)

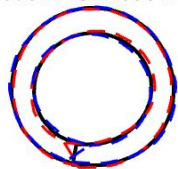


Code22: Principal Mode 3 Variation (± 2 SD)

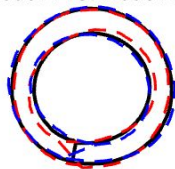


Shape mean + Aligned Pointsets + Principal Modes

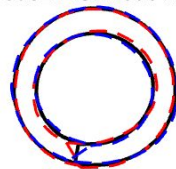
Code11 1st Mode $\pm 2\sigma$



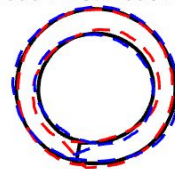
Code11 1st Mode $\pm 3\sigma$



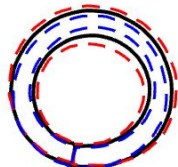
Code22 1st Mode $\pm 2\sigma$



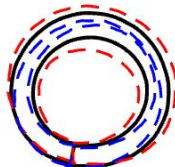
Code22 1st Mode $\pm 3\sigma$



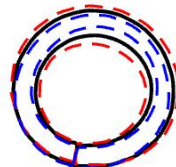
Code11 2nd Mode $\pm 2\sigma$



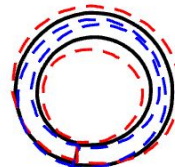
Code11 2nd Mode $\pm 3\sigma$



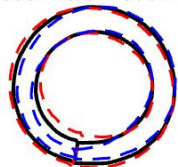
Code22 2nd Mode $\pm 2\sigma$



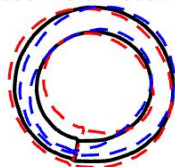
Code22 2nd Mode $\pm 3\sigma$



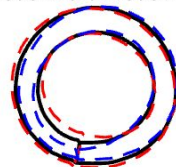
Code11 3rd Mode $\pm 2\sigma$



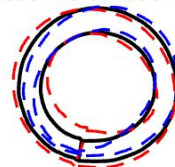
Code11 3rd Mode $\pm 3\sigma$



Code22 3rd Mode $\pm 2\sigma$

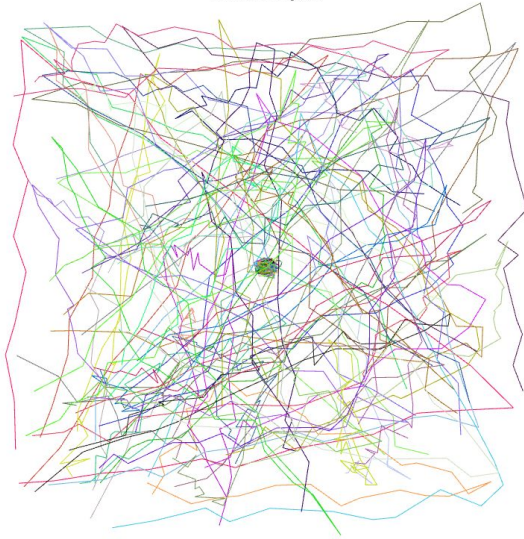


Code22 3rd Mode $\pm 3\sigma$

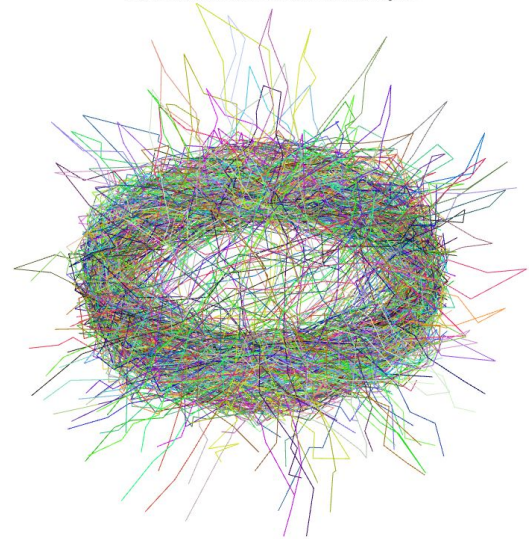


Q3 - Robust Shape Mean

Initial shapes



Translated and Scaled Initial shapes



Shape mean + Aligned Pointsets (Parts a and b)

Squared: Aligned Shapes and Mean Shape



Not squared: Aligned Shapes and Mean Shape



Q4: Kernel PCA to Model Variation in Object Segmentations

