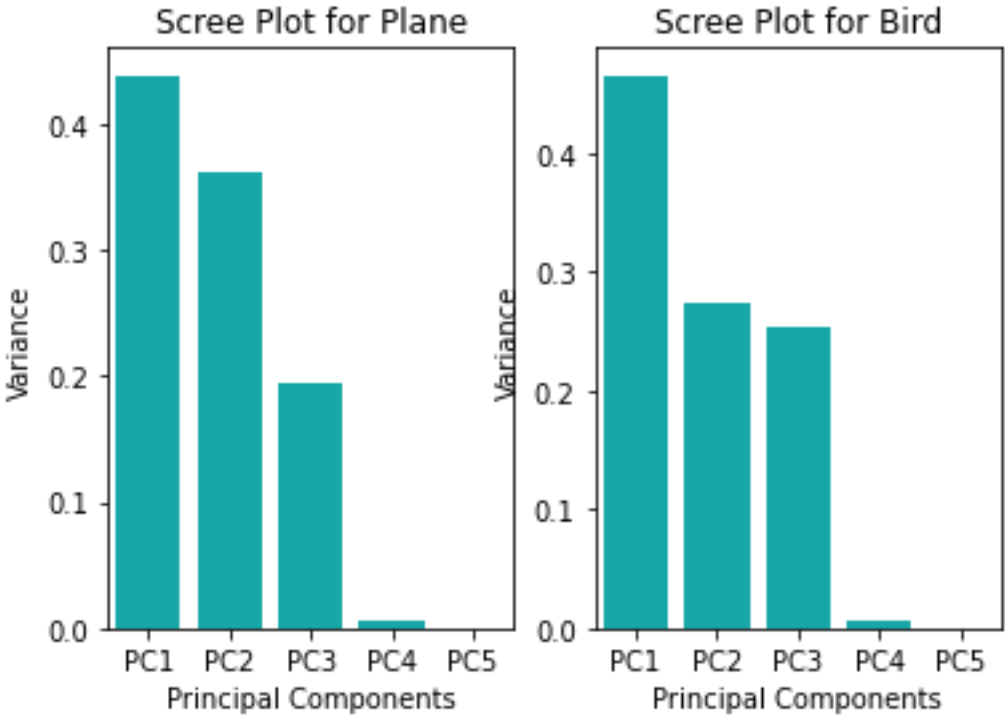
HW 4

1. **What is the smallest reasonable value od D to represent data?**

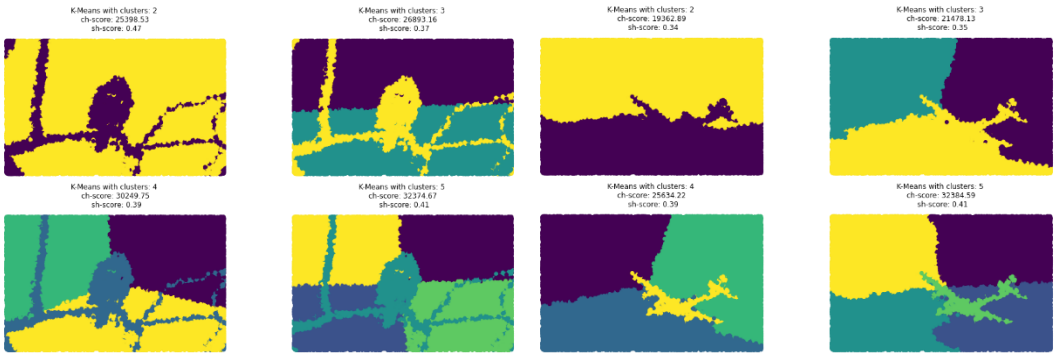


3-dimensional is reasonable to represent bird and plane image

2. **Comment the influence of perplexity on visualizations**
    - We observe a tendency towards clearer shapes as the perplexity value increases.
    - Number of iterations also matters to reach a stable configuration.
    - Here I used constant 300 iterations by changing perplexities.
    - It is also noted that perplexity should be less than total number of points else there will be unexpected behavior in image.

HW 5

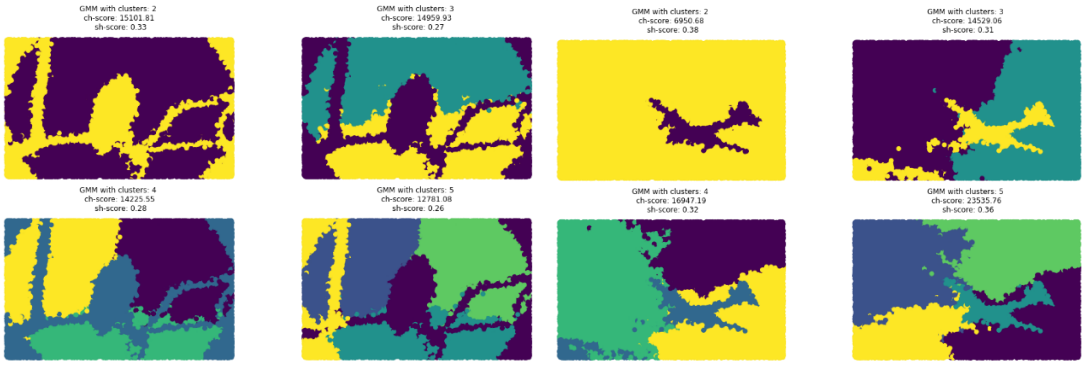
1. **Based in visualizations and clustering score comment best value for K for K-Means clustering ?**



For Bird, 2 clusters resulting in good segmentation

For Plane, 4 & 5 clusters resulting in good segmentation

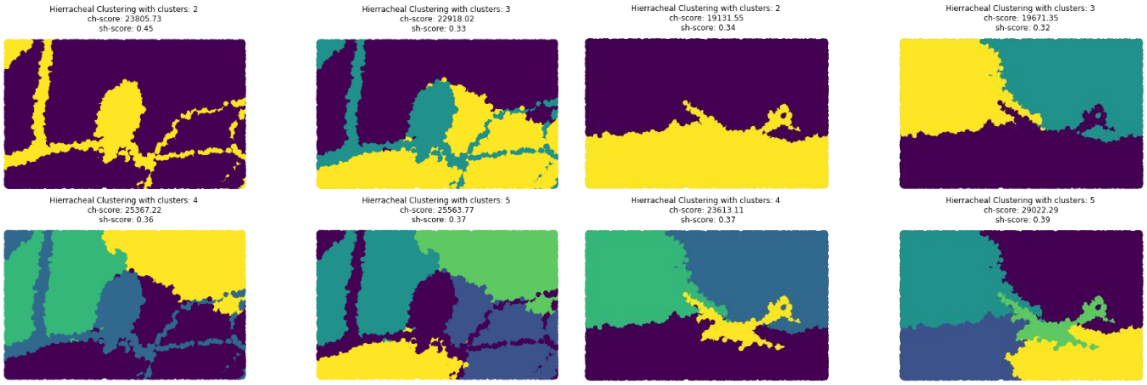
2. **Based in visualizations and clustering score comment best value for K for GMM clustering ?**



For Bird, 2 clusters resulting in good segmentation

For Plane, 2 clusters resulting in good segmentation

3. Based in visualizations and clustering score comment best value for K for Hierarchical clustering ?



For Bird, 2 clusters resulting in good segmentation

For Plane, 4 &5 clusters resulting in good segmentation