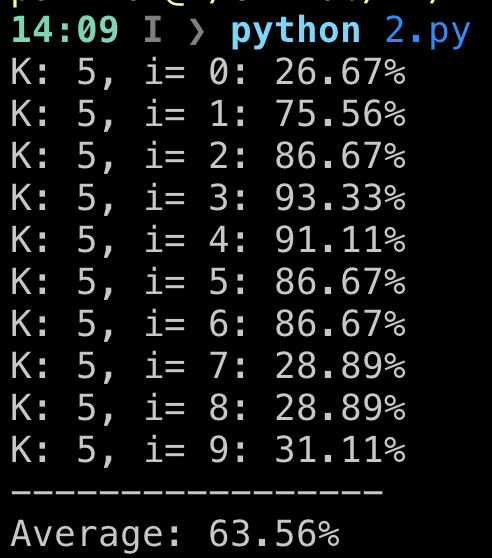
1. **If we want to use ICA for dimensionality reduction, can we directly pick independent components with larger energy? Explain.**No, we can’t. While performing ICA, there are three ambiguities, which are sign, scale, and permutation; the independent components with larger energy may, thus, be scaled.
2. **Use the FA approach to reduce the feature dimension from 4 to 3 for Iris data set. As usual, take 70% of the samples as training set and perform FA. Use 5-NN to classify the test set and then report the average accuracy after 10 trials. For simplicity, you may assume and use the pseudo inverse solution.**  
     
   
3. Suppose we have two classes of data. The samples in the first class are from where x1 and x2 are jointly Gaussian with and . The samples in the second class are from where y1 and y2 are jointly Gaussian with and . Find the (with normalization) and optimal decision value .
4. **We have a dataset Follow the k-means algorithm to complete the assignment step and the update step for one run. Use , initial and in the computation.**