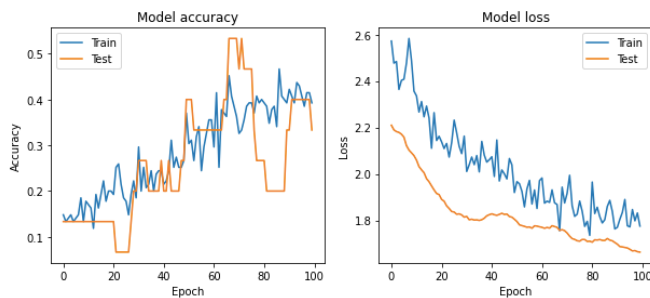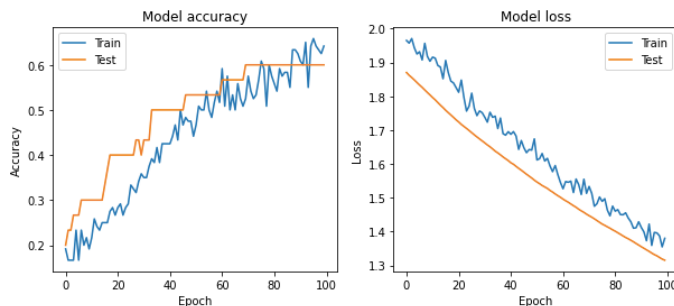# Assignment 6
RBF

Question 1
1) If we change the cluster centres then the accuracy of the model is varies.

2) Effect of changing the Size of training and Test set
    For Number of cluster 7
    A) When the Test size is 10%
        Test loss: 1.6631152629852295
        Test accuracy: 0.3333333432674408

 B) When the Test size is 20%
        Test loss: 1.3153269290924072
        Test accuracy: 0.6000000238418579

C) When the Test size is 30%
        Test loss: 1.6410406827926636
        Test accuracy: 0.4888888895511627
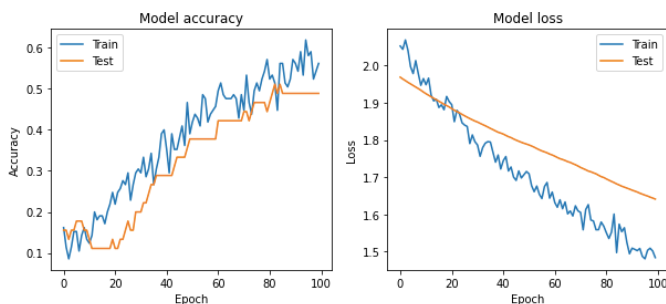
3) Effect of changing the radial function (Try with Gaussian and Multi-quadric)

Multi-quadric and other globally supported RBF have a good hole-filling property: if you have holes that are irregular with unknown scales, they're going to be smoothly interpolated over according to surrounding trends from neighborhoods of corresponding scales. If your dataset has a regular sparsity of one radius you can estimate, you can use instead compactly supported RBF, or Gaussian RBF which is practically local.
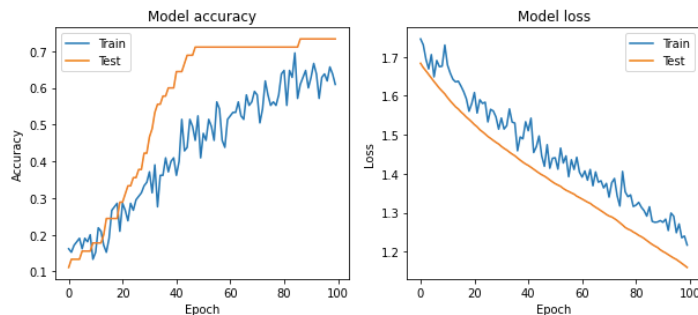
4) If we change the initial weights of the RBF kernel function, then the overall accuracy changes(very less) for iris dataset.

5) Effect of change of cluster centres for 30% test split.
   a) No. of clusters is 5
      Test loss: 1.1592904329299927
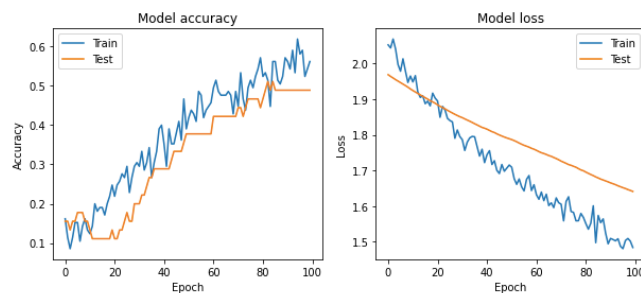   Test accuracy: 0.7333333492279053

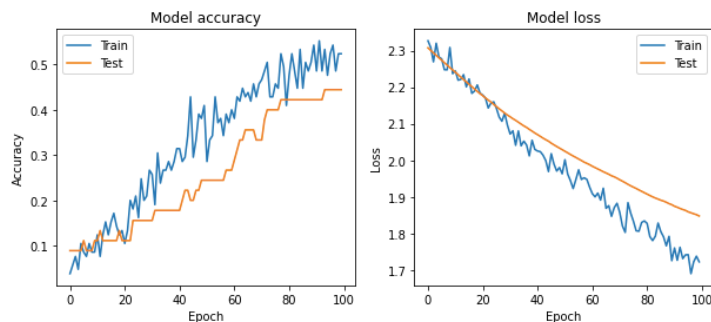   b) No. of cluster is 7
      Test loss: 1.6410406827926636
      Test accuracy: 0.4888888895511627

   c) No. of cluster is 9
      Test loss: 1.8475803136825562
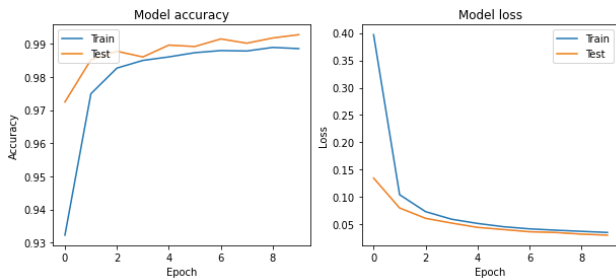   Test accuracy: 0.4444444477558136

Question 2

1) If we change the cluster centres then the accuracy of the model is varies.

2) Effect of changing the Size of training and Test set
   For Number of cluster 5
   A) When the Test size is 10%
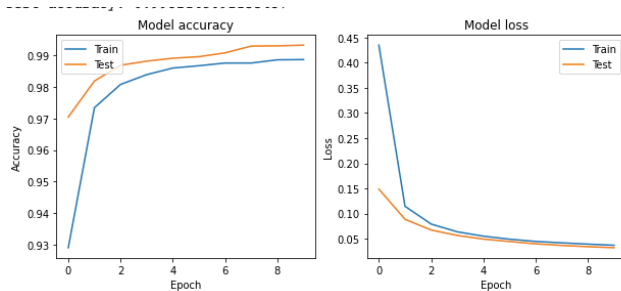   Test loss: 0.030251802876591682
      Test accuracy: 0.9927142858505249

   B) When the Test size is 20%
      Test loss: 0.03220995515584946
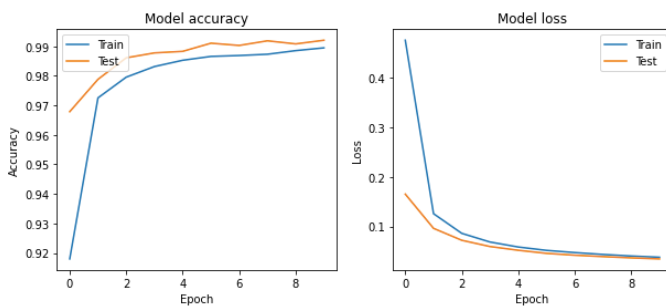   Test accuracy: 0.9932143092155457

   C) When the Test size is 30%
      Test loss: 0.03479098528623581
      Test accuracy: 0.9920476078987122

3) Effect of changing the radial function (Try with Gaussian and Multi-quadric)

Multi-quadric and other globally supported RBF have a good hole-filling property: if you have holes that are irregular with unknown scales, they're going to be smoothly interpolated over according to surrounding trends from neighborhoods of corresponding scales. If your dataset has a regular sparsity of one radius you can estimate, you can use instead compactly supported RBF, or Gaussian RBF which is practically local.
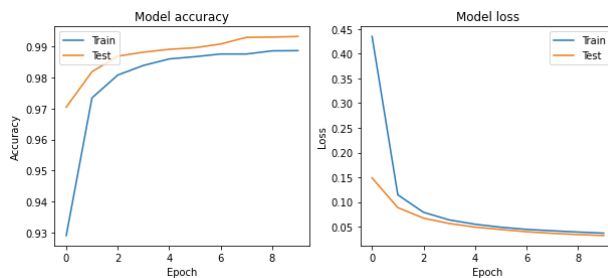
4) If we change the initial weights of the RBF kernel function, then the overall accuracy doesn't show any change in my case.

5) Effect of change of cluster centres for 20% test split.
   a) No. of clusters is 5
      Test loss: 0.03220995515584946
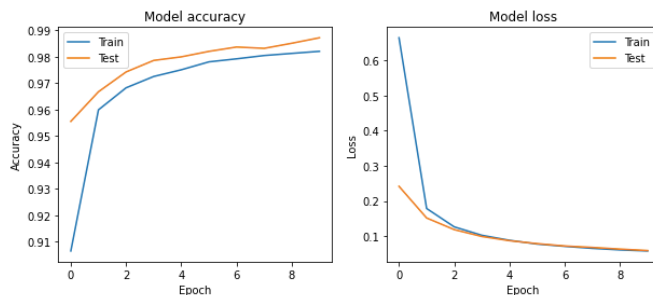
      Test accuracy: 0.9932143092155457

   b) No. of cluster is 10
      Test loss: 0.059464700520038605
      Test accuracy: 0.9872142672538757

   c) No. of cluster is 15
      Test loss: 0.07098060101270676
      Test accuracy: 0.9802857041358948