### **Group 3107**

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Gocon, Rhealeen B.

Lopez, Daryl Jake F.

### 1. Concatenating

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Fitting 5 folds for each of 18 candidates, totalling 90 fits
[CV 1/5; 1/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1
[CV 1/5; 1/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1;, score=1.000 total time===0.0s
[CV 2/5; 1/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1
[CV 2/5; 1/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1;
[CV 3/5; 1/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1;
[CV 3/5; 1/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1;
[CV 3/5; 1/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1;, score=1.000 total time= 0.0s
[CV 4/5; 1/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1
[CV 4/5; 1/18] END features pca n components=1, features univ select k=1, svm C=8.1;, score=1.888 total time= 0.8s
[CV 5/5; 1/18] START features pca n components=1, features univ select k=1, svm C=8.1;
[CV 5/5; 1/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=0.1;, score=1.000 total time= 0.0s
[CV 1/5; 2/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=1
 [CV 1/5; 2/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=1;, score=1.000 total time= 0.0s
[CV 2/5; 2/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=1
[CV 2/5; 2/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=1;, score=1.000 total time= 0.0s
[CV 3/5; 2/18] START features pca n components=1, features univ select k=1, svm C=1
[CV 3/5; 2/18] END features pca n components=1, features univ select k=1, svm C=1;
[CV 4/5; 2/18] START features pca n components=1, features univ select k=1, svm C=1
                                                                                                                                                                      1;, score=1.000 total time= 0.0s
 [CV 4/5; 2/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=1;, score=1.000 total time= 0.0s
[CV 5/5; 2/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=1
[CV 5/5; 2/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=1;, score=1.000 total time= 0.0s
[CV 1/5; 3/18] START features_pca_n_components=1, features_univ_select_k=1, svm_C=10
[CV 1/5; 3/18] END features_pca_n_components=1, features_univ_select_k=1, svm_C=10;, score=1.000 total time= 0.0s
[CV 2/5; 3/18] START features _pca_n_components=1, features _univ_select _k=1, svm_C=10
[CV 2/5; 3/18] END features _pca_n_components=1, features _univ_select _k=1, svm_C=10;, score=1.000 total time= 0.0s
[CV 3/5; 3/18] START features _pca_n_components=1, features _univ_select _k=1, svm_C=10
[CV 3/5; 3/18] END features pra n components=1, features univ_select_k=1, svm_C=10;, score=1.000 total time= 0.0s

[CV 4/5; 3/18] START features_pra_n_components=1, features_univ_select_k=1, svm_C=10
[CV 4/5; 3/18] END features pca n components-1, features univ select k=1, svm C=10;, score=1.000 total time= 0.0s [CV 5/5; 3/18] START features pca n components=1, features univ select k=1, svm C=10 [CV 5/5; 3/18] END features pca n components=1, features univ select k=1, svm C=10; score=1.000 total time= 0.0s [CV 1/5; 4/18] START features pca n components=1, features univ select k=2, svm C=0; score=1.000 total time= 0.0s
[CV 1/5; 4/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=8.1;, score=1.888 total time= 0.8s
[CV 2/5; 4/18] START features_pca_n_components=1, features_univ_select_k=2, svm_C=8.1
[CV 2/5; 4/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=8.1;, score=1.888 total time= 0.8s
[CV 3/5; 4/18] START features_pca_n_components=1, features_univ_select_k=2, svm_C=8.1
[CV 3/5; 4/18] END features pca n components=1, features univ select k=2, svm C=8.1;, score=1.888 total time= 0.8s
[CV 4/5; 4/18] START features pca n components=1, features univ select k=2, svm C=8.1
 [CV 4/5; 4/18] END features_pca__components=1, features_univ_select_k=2, svm_C=0.1;, score=1.000 total time= 0.0s
[CV 5/5; 4/18] START features pca n components=1, features univ select k=2, svm C=0.1
[CV 5/5; 5/18] START features pca n components=1, features univ select k=2, svm C=0.1; score=1.000 total time= 0.0s
[CV 1/5; 5/18] START features pca n components=1, features univ select k=2, svm C=1.
[CV 1/5; 5/18] END features pca n components=1, features univ select k=2, svm C=1; score=1.000 total time= 0.0s
[CV 2/5; 5/18] START features pca n components=1, features univ select k=2, svm C=1; score=1.000 total time= 0.0s
[CV 2/5; 5/18] END features pca n components=1, features univ select k=2, svm C=1;, score=1.000 total time= 0.0s [CV 3/5; 5/18] START features pca n components=1, features univ select k=2, svm C=1 [CV 3/5; 5/18] END features pca n components=1, features univ select k=2, svm C=1;, score=1.000 total time= 0.0s
[CV 4/5; 5/18] START features_pca_n_components=1, features_univ_select_k=2, svm_C=1
[CV 4/5; 5/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=1; score=1.000 total time= 0.0s
[CV 5/5; 5/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=1; score=1.000 total time= 0.0s
[CV 5/5; 5/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=1; score=1.000 total time= 0.0s
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[CV 1/5; 6/18] START features_pca_n_components=1, features_univ_select_k=2, svm_C=10
 [CV 1/5; 6/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s

[CV 2/5; 6/18] START features_pca_n_components=1, features_univ_select_k=2, svm_C=10
  [CV 2/5; 6/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s
                    START features pca n components=1, features univ select k=2, svm
  [CV 3/5; 6/18]
                                                                                                              C=18
  [CV 3/5; 6/18] END features pca n components=1, features univ select k=2, svm C=10;, score=1.000 total time= 0.0s
  [CV 4/5; 6/18] START features _pca_ n components=1, features _univ_select_ k=2, svm
 [CV 4/5; 6/18] END features_pca_n_components=1, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s
[CV 5/5; 6/18] START features_pca_n_components=1, features_univ_select_k=2, svm_C=10
 [CV 5/5; 6/18] END features pca n components=1, features univ select k=2, svm C=10;, score=1.000 total time= 0.0s
[CV 1/5; 7/18] START features pca n components=2, features univ select k=1, svm C=0.1
  [CV 1/5; 7/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=0.1;, score=1.000 total time= 0.0s
  [CV 2/5: 7/18] START features pca n components=2, features univ select k=1, svm C=0.1
  CV 2/5; 7/18] END features_pca_n components=2, features_univ_select_k=1, svm_C=0.1;, score=1.000 total time=
 [CV 3/5; 7/18] START features_pca_n_components=2, features_univ_select_k=1, svm_C=0.1
[CV 3/5; 7/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=0.1;, score=1.000 total time=
  [CV 4/5; 7/18] START features pca n_components=2, features univ_select_k=1, svm_C=0.1
[CV 4/5; 7/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=0.1;, score=1.000 total time= 0.0s
  [CV 5/5; 7/18] START features pca n components=2, features univ select k=1, svm C=0.1
  [CV 5/5; 7/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=8.1;, score=1.888 total time= 0.8s
 [CV 1/5; 8/18] START features_pca_n_components=2, features_univ_select_k=1, svm_C=1
[CV 1/5; 8/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=1;, score=1.000 total time=
  [CV 2/5; 8/18] START features_pca_n_components=2, features_univ_select_k=1, svm
  [CV 2/5; 8/18] END features pca n components=2, features univ select k=1, svm C=1;, score=1.000 total time= 0.0s
  [CV 3/5; 8/18] START features_pca_n_components=2, features_univ_select_k=1, svm_C=1
  [CV 3/5; 8/18] END features pca n components=2, features univ select k=1, svm C=1;, score=1.000 total time= 0.0s
  CV 4/5; 8/18] START features _pca_ n_components=2, features _univ_select _k=1, svm_C=1
  [CV 4/5; 8/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=1;, score=1.000 total time= 0.0s
  [CV 5/5; 8/18] START features _pca_ n_components=2, features _univ_select_ k=1, svm
  [CV 5/5; 8/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=1;
[CV 1/5; 9/18] START features_pca_n_components=2, features_univ_select_k=1, svm_C=1
                                                                                                                  score=1.000 total time= 0.0s
  [CV 1/5; 9/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=10;, score=1.000 total time= 0.0s
  [CV 2/5; 9/18] START features _pca_ n components=2, features _univ_select_ k=1, svm
 [CV 2/5; 9/18] END features_pca_n_components=2, features_univ_select_k=1, svm_C=10;, score=1.000 total time= 0.0s

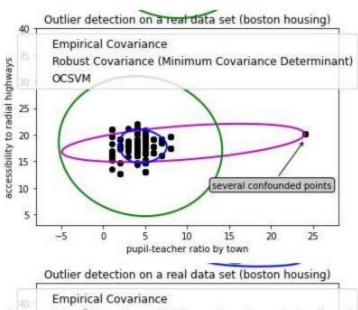
[CV 3/5; 9/18] START features_pca_n_components=2, features_univ_select_k=1, svm_C=10
[CV 3/5; 9/18] END features pca n components=2, features univ select k=1, svm C=10;, score=1.000 total time= 0.0s
[CV 4/5; 9/18] START features_pca_n_components=2, features_univ_select_k=1, svm_C=10
[CV 4/5; 9/18] END features pca n components=2, features univ select k=1, svm_C=18;, score=1.000 total time= 0.0s
[CV 5/5; 9/18] START features pca n components=2, features univ select k=1, svm_C=10
[CV 5/5; 9/18] END features pca n components=2, features univ select k=1, svm_C=10;, score=1.000 total time= 0.0s
[CV 1/5; 10/18] START features_pca_n_components=2, features_univ_select_k=2, svm_C=0.1
[CV 1/5; 10/18] END features pca_n_components=2, features univ_select_k=2, svm_C=0.1;, score=1.000 total time= 0.0s
CV 2/5; 10/18] START features_pca_n_components=2, features_univ_select_k=2, svm_C=0.1
[CV 2/5; 18/18] END features pca n components=2, features univ_select_k=2, svm_C=8.1;, score=1.888 total time= 0.8s
[CV 3/5; 18/18] START features pca n components=2, features univ_select_k=2, svm_C=8.1
[CV 3/5; 18/18] END features pca n components=2, features univ select k=2, svm C=8.1;, score=1.888 total time= 0.8s [CV 4/5; 18/18] START features pca n components=2, features univ select k=2, svm C=8.1
[CV 4/5; 18/18] END features pca n components=2, features univ select k=2, svm C=8.1;, score=1.888 total time= 0.8s [CV 5/5; 18/18] START features pca n components=2, features univ select k=2, svm C=8.1
                   END features pca n components=2, features univ select k=2, svm C=8.1;, score=1.888 total time= 8.8s
START features pca n components=2, features univ select k=2, svm C=1
CV 5/5; 10/18]
CV 1/5: 11/181
[CV 1/5; 11/18] END features pca n components=2, features univ select k=2, svm [=1;, score=1.000 total time= 0.0s [CV 2/5; 11/18] START features pca n components=2, features univ select k=2, svm [=1]
[CV 2/5; 11/18] END features_pca_n_components=2, features_univ_select_k=2, svm_C=1;, score=1.000 total time= 0.0s
[CV 3/5: 11/18] START features pca n components=2, features univ select k=2, sym C=1
CV 3/5; 11/18] END features _pra_n_components=2, features _univ_select _k=2, svm_C=1;, score=1.000 total time= 0.0s
[CV 4/5; 11/18] START features_pca_n_components=2, features_univ_select_k=2, svm_C=1
[CV 4/5; 11/18] END features_pca_n_components=2, features_univ_select_k=2, svm_C=1;, score=1.888 total time= 0.8s
[CV 5/5; 11/18] START features_pca_n_components=2, features_univ_select_k=2, svm_C=1
[CV 5/5; 11/18] END features_pca_n_components=2, features_univ_select_k=2, svm_C=1;, score=1.888 total time= 0.8s
[CV 1/5; 12/18] START features_pca_n_components=2, features_univ_select_k=2, svm_C=10
[CV 1/5; 12/18] END features_pca_n_components=2, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s
CV 2/5; 12/18] START features pca n components=2, features univ select k=2, svm C=10

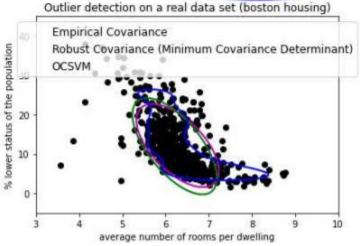
[CV 2/5; 12/18] END features pca n components=2, features univ select k=2, svm C=10;, score=1.000 total time= 0.0s
[CV 3/5; 12/18] START features_pca_n_components=2, features_univ_select_k=2, svm
                                                                                                             C=18
[CV 3/5; 12/18] END features pca n components=2, features univ select k=2, svm C=10;, score=1.000 total time= 0.0s
[CV 4/5; 12/18] START features_pca_n_components=2, features_univ_select_k=2, svm_C=10
[CV 4/5; 12/18] END features pca n components=2, features univ select k=2, svm C=18;, score=1.888 total time= 0.8s
CV 5/5; 12/18] START features_pca_n_components=2, features_univ_select_k=2, svm_C=18
[CV 5/5; 12/18] END features_pca_n_components=2, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s [CV 1/5; 13/18] START features_pca_n_components=3, features_univ_select_k=1, svm_C=0.1
[CV 1/5; 13/18] END features pca n components=3, features univ select k=1, svm C=0.1;, score=1.000 total time= 0.0s
[CV 2/5; 13/18] START features pca n components=3, features univ select k=1, svm C=0.1
[CV 2/5; 13/18] END features pca n components=3, features univ select k=1, svm C=0.1;, score=1.000 total time= 0.0s
[CV 3/5; 13/18] START features pca n components=3, features univ select k=1, svm C=0.1
                    END features pca n components=3, features univ select k=1, svm C=0.1;, score=1.000 total time= 0.0s START features pca n components=3, features univ select k=1, svm C=0.1;
          13/18
[CV 4/5; 13/18]
[CV 4/5; 13/18] END features pca n components=3, features univ select k=1, svm C=8.1;, score=1.888 total time= 0.8s
[CV 5/5; 13/18] START features pca n components=3, features univ select k=1, svm C=8.1
CV 5/5; 13/18] END features pca n components=3, features univ select k=1, svm C=0.1; score=1.000 total time= 0.0s
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[CV 1/5; 14/18] END features _pca_ n_components=3, features _univ_select _k=1, svm_C=1;, score=1.000 total time= 0.0s
           [CV 2/5; 14/18] START features_pca_n_components=3, features_univ_select_k=1, svm_C=1
           [CV 2/5; 14/18] END features pca n components=3, features univ select k=1, svm C=1;, score=1.000 total time= 0.0s
           [CV 3/5; 14/18] START features_pca_n_components=3, features_univ_select_k=1, svm_C=1
           [CV 3/5; 14/18] END features_pca_n components=3, features_univ_select_k=1, svm_C=1;, score=1.000 total time= 0.0s
[CV 4/5; 14/18] START features_pca_n_components=3, features_univ_select_k=1, svm_C=1
           [CV 4/5; 14/18] END features _pca_ n components=3, features _univ_select_k=1, svm__C=1;, score=1.000 total time= 0.0s
[CV 5/5; 14/18] START features _pca_ n components=3, features _univ_select_k=1, svm__C=1
[CV 5/5; 14/18] END features _pca_ n components=3, features _univ_select_k=1, svm__C=1;, score=1.000 total time= 0.0s
           [CV 1/5; 15/18] START features_pca_n_components=3, features_univ_select_k=1, svm_C=10
           [CV 1/5; 15/18] END features_pra_n_components=3, features_univ_select_k=1, svm_C=10;, score=1.000 total time= 0.0s
[CV 2/5; 15/18] START features_pra_n_components=3, features_univ_select_k=1, svm_C=10
           [CV 2/5; 15/18] END features pca n components=3, features univ select k=1, svm C=10;, score=1.00 total time= 0.0s [CV 3/5; 15/18] START features pca n components=3, features univ select k=1, svm C=10
           [CV 3/5; 15/18] END features_pca_n_components=3, features_univ_select_k=1, svm_C=10;, score=1.000 total time= 0.0s
           [CV 4/5; 15/18] START features pca n components=3, features univ select k=1, svm C=10
           [CV 4/5; 15/18] END features_pca_n_components=3, features_univ_select_k=1, svm_C=18;, score=1.888 total time= 8.8s
           [CV 5/5; 15/18] START features__pca_n_components=3, features__univ_select__k=1, svm__C=10
[CV 5/5; 15/18] END features__pca__n_components=3, features__univ_select__k=1, svm__C=10;, score=1.000 total time= 0.0s
           [CV 1/5; 16/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1
[CV 1/5; 16/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1; score=1.000 total time= 0.0s
[CV 2/5; 16/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1
[CV 2/5; 16/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1;, score=1.000 total time= 0.0s
           [CV 3/5; 16/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1
[CV 3/5; 16/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1;, score=1.000 total time= 0.0s
           [CV 4/5; 16/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1
[CV 4/5; 16/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1;, score=1.000 total time= 0.0s
           [CV 5/5; 16/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1
[CV 5/5; 16/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=0.1;, score=1.000 total time= 0.0s
           [CV 1/5; 17/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=1
           [CV 1/5; 17/18] END features pca n components=3, features univ select k=2, svm C=1;, score=1.000 total time= 0.0s
           [CV 2/5; 17/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=1
           [CV 2/5; 17/18] END features_pca_n components=3, features_univ_select_k=2, svm_C=1;, score=1.000 total time= 0.0s
[CV 3/5; 17/18] START features_pca_n components=3, features_univ_select_k=2, svm_C=1
[CV 3/5; 17/18] END features_pca_n components=3, features_univ_select_k=2, svm_C=1;, score=1.000 total time= 0.0s
           [CV 4/5; 17/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=1
           [CV 4/5; 17/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=1;, score=1.000 total time= 0.0s
[CV 5/5; 17/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=1
           [CV 5/5; 17/18] END features_pca_n components=3, features_univ_select_k=2, svm_C=1;, score=1.000 total time= 0.0s
[CV 1/5; 18/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=10
           [CV 1/5; 18/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s
           [CV 2/5; 18/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=10
           [CV 2/5; 18/18] END features pca n components=3, features univ select k=2, svm C=10;, score=1.00 total time= 0.0s [CV 3/5; 18/18] START features pca n components=3, features univ select k=2, svm C=10
           [CV 3/5; 18/18] END features_pra_n_components=3, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s
           [CV 4/5; 18/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=10
[CV 4/5; 18/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s
           [CV 5/5; 18/18] START features_pca_n_components=3, features_univ_select_k=2, svm_C=10
           [CV 5/5; 18/18] END features_pca_n_components=3, features_univ_select_k=2, svm_C=10;, score=1.000 total time= 0.0s
           Pipeline(steps=[('features',
Pipeline(steps=[('features',
                                         FeatureUnion(transformer list=[('pca', PCA(n_components=1)),
                                                                                                                     ('univ select',
                                                                                                                       SelectKBest(k=1)))),
                                       ('svm', SVC(C=0.1, kernel='linear'))])
```

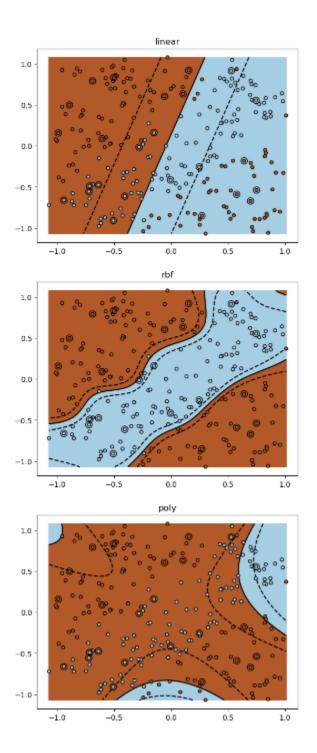
[CV 1/5; 14/18] START features\_pca\_n\_components=3, features\_univ\_select\_k=1, svm\_C=1

## 2. Applications - Boston Housing Dataset

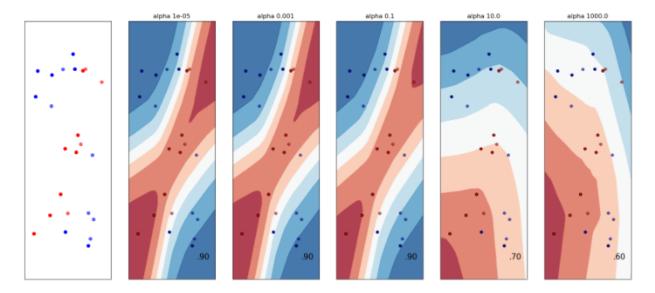




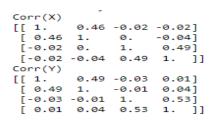
# 3. Support Vector Machine - Iris Dataset

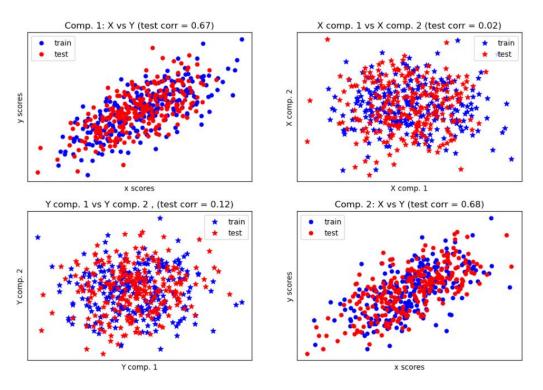


#### 4. Neural Networks



## 5. Cross Decomposition





```
True B (such that: Y = XB + Err)
[[1 1 1]
[2 2 2]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
[0 0 0]
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[0 0 0 0]
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[0 0]
[0 0]
[0 0]
[0 0]
[0 0]
[0 0]
[0 0]
[0 0]
[0 0]
[0 0]
```