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CPTS 434

Introduction to Neural Networks and Applications

11-05-2019

Homework #8

Link for Python Code:

https://colab.research.google.com/drive/1SX11uxr6-lhII8YFGZc7N_IWYsrk1kmk

=== Run information ===

Scheme: weka.classifiers.functions.RBFNetwork -B 2 -S 1 -R 1.0E-8 -M -1 -W 0.1

Relation: one-five-1561-no name

Instances: 1561

Attributes: 3

        Intensity

        Symmetry

        Class

Test mode: 10-fold cross-validation

=== Classifier model (full training set) ===

Radial basis function network

(Linear regression applied to K-means clusters as basis functions):

Linear Regression Model

Class =

1.9794 * pCluster_0_0 +

        -1.9789 * pCluster_0_1 +

          2.9884

Time taken to build model: 0.02 seconds

=== Predictions on test data ===

inst#,actual,predicted,error

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112,5,4.961,-0.039

113,1,1.007,0.007

114,1,1.007,0.007

115,5,4.961,-0.039

116,1,1.007,0.007

117,1,1.007,0.007

118,5,4.961,-0.039

119,1,1.007,0.007

120,5,4.961,-0.039

121,5,4.961,-0.039

122,1,1.007,0.007

123,5,4.961,-0.039

124,5,4.961,-0.039

125,5,4.961,-0.039

126,1,1.007,0.007

127,5,4.961,-0.039

128,5,4.961,-0.039

129,5,4.961,-0.039

130,1,1.007,0.007

131,1,1.007,0.007

132,1,1.007,0.007

133,1,1.007,0.007

134,1,1.007,0.007

135,5,4.961,-0.039

136,1,1.007,0.007

137,5,4.961,-0.039

138,1,1.007,0.007

139,1,1.007,0.007

140,5,4.961,-0.039

141,1,1.007,0.007

142,5,4.961,-0.039

143,5,1.876,-3.124

144,5,4.961,-0.039

145,1,1.007,0.007

146,1,1.007,0.007

147,1,1.007,0.007

148,5,4.961,-0.039

149,1,1.007,0.007

150,5,4.961,-0.039

151,1,1.007,0.007

152,5,4.961,-0.039

153,5,4.961,-0.039

154,1,1.007,0.007

155,1,1.007,0.007

156,5,4.961,-0.039

1,1,1.012,0.012

2,1,1.012,0.012

3,1,1.012,0.012

4,1,1.012,0.012

5,5,4.966,-0.034

6,1,1.012,0.012

7,5,4.966,-0.034

8,1,1.012,0.012

9,5,4.966,-0.034

10,1,1.012,0.012

11,1,1.012,0.012

12,1,1.012,0.012

13,5,4.966,-0.034

14,5,4.966,-0.034

15,5,4.966,-0.034

16,1,1.012,0.012

17,1,1.012,0.012

18,1,1.012,0.012

19,1,1.012,0.012

20,1,1.012,0.012

21,1,1.012,0.012

22,1,1.012,0.012

23,1,1.012,0.012

24,1,1.012,0.012

25,5,4.966,-0.034

26,5,4.966,-0.034

27,1,1.012,0.012

28,1,1.012,0.012

29,1,1.012,0.012

30,1,1.142,0.142

31,1,1.012,0.012

32,5,4.966,-0.034

33,1,1.012,0.012

34,5,4.966,-0.034

35,5,4.966,-0.034

36,5,4.966,-0.034

37,1,1.012,0.012

38,5,4.966,-0.034

39,1,1.012,0.012

40,1,1.012,0.012

41,1,1.012,0.012

42,1,1.019,0.019

43,1,1.012,0.012

44,1,1.012,0.012

45,1,1.012,0.012

46,5,4.966,-0.034

47,1,1.012,0.012

48,5,4.966,-0.034

49,5,4.966,-0.034

50,1,1.012,0.012

51,1,1.012,0.012

52,1,1.012,0.012

53,1,1.012,0.012

54,1,1.012,0.012

55,1,1.012,0.012

56,1,1.012,0.012

57,1,1.012,0.012

58,5,4.966,-0.034

59,1,1.012,0.012

60,5,4.966,-0.034

61,5,4.966,-0.034

62,1,1.012,0.012

63,1,1.012,0.012

64,5,4.966,-0.034

65,5,4.966,-0.034

66,1,1.012,0.012

67,1,1.012,0.012

68,1,1.012,0.012

69,1,1.012,0.012

70,1,1.012,0.012

71,1,1.012,0.012

72,1,1.012,0.012

73,1,1.012,0.012

74,1,1.012,0.012

75,1,1.012,0.012

76,1,1.012,0.012

77,1,1.015,0.015

78,5,4.964,-0.036

79,5,4.966,-0.034

80,1,1.012,0.012

81,1,1.012,0.012

82,1,1.012,0.012

83,1,1.012,0.012

84,5,4.966,-0.034

85,5,4.966,-0.034

86,1,1.012,0.012

87,5,4.966,-0.034

88,5,4.966,-0.034

89,1,1.012,0.012

90,1,1.012,0.012

91,1,1.012,0.012

92,5,4.966,-0.034

93,1,1.012,0.012

94,1,1.012,0.012

95,1,1.012,0.012

96,1,1.012,0.012

97,5,4.966,-0.034

98,1,1.012,0.012

99,1,1.012,0.012

100,5,4.966,-0.034

101,5,4.966,-0.034

102,1,1.012,0.012

103,1,1.012,0.012

104,1,1.012,0.012

105,5,4.966,-0.034

106,5,4.966,-0.034

107,1,1.012,0.012

108,1,1.012,0.012

109,5,4.966,-0.034

110,5,4.966,-0.034

111,1,1.012,0.012

112,1,1.012,0.012

113,1,1.012,0.012

114,5,4.966,-0.034

115,5,4.966,-0.034

116,5,4.966,-0.034

117,1,1.012,0.012

118,1,1.012,0.012

119,1,1.014,0.014

120,1,1.012,0.012

121,1,1.012,0.012

122,5,4.966,-0.034

123,1,1.012,0.012

124,1,1.012,0.012

125,1,1.012,0.012

126,1,1.012,0.012

127,5,4.966,-0.034

128,1,1.012,0.012

129,5,4.966,-0.034

130,5,4.966,-0.034

131,1,1.012,0.012

132,1,1.012,0.012

133,5,4.966,-0.034

134,5,4.966,-0.034

135,5,4.966,-0.034

136,5,4.966,-0.034

137,1,1.012,0.012

138,1,1.012,0.012

139,1,1.012,0.012

140,5,4.966,-0.034

141,5,4.966,-0.034

142,1,1.012,0.012

143,1,1.022,0.022

144,5,4.966,-0.034

145,5,4.966,-0.034

146,1,1.012,0.012

147,1,1.012,0.012

148,1,1.012,0.012

149,5,4.966,-0.034

150,5,4.966,-0.034

151,1,1.012,0.012

152,5,4.966,-0.034

153,5,4.966,-0.034

154,1,1.012,0.012

155,5,4.966,-0.034

156,1,1.012,0.012

1,5,4.971,-0.029

2,5,4.971,-0.029

3,5,4.971,-0.029

4,1,1.011,0.011

5,5,4.971,-0.029

6,5,4.971,-0.029

7,1,1.011,0.011

8,5,4.971,-0.029

9,1,1.011,0.011

10,1,1.011,0.011

11,1,1.011,0.011

12,5,4.971,-0.029

13,1,1.011,0.011

14,5,4.971,-0.029

15,5,4.971,-0.029

16,1,1.011,0.011

17,5,4.971,-0.029

18,5,4.971,-0.029

19,5,4.971,-0.029

20,5,4.971,-0.029

21,1,1.011,0.011

22,5,4.971,-0.029

23,5,4.971,-0.029

24,1,1.011,0.011

25,5,4.971,-0.029

26,1,1.011,0.011

27,1,1.011,0.011

28,5,4.971,-0.029

29,1,1.011,0.011

30,1,1.011,0.011

31,1,1.011,0.011

32,5,4.971,-0.029

33,5,4.971,-0.029

34,1,1.011,0.011

35,5,4.971,-0.029

36,1,1.011,0.011

37,1,1.011,0.011

38,5,4.971,-0.029

39,1,1.011,0.011

40,5,4.971,-0.029

41,5,4.971,-0.029

42,5,4.971,-0.029

43,1,1.011,0.011

44,1,1.011,0.011

45,1,1.011,0.011

46,1,1.011,0.011

47,5,4.971,-0.029

48,5,4.971,-0.029

49,1,1.011,0.011

50,1,1.011,0.011

51,5,4.971,-0.029

52,5,4.971,-0.029

53,1,1.011,0.011

54,1,1.011,0.011

55,1,1.011,0.011

56,5,4.971,-0.029

57,1,1.011,0.011

58,5,4.971,-0.029

59,5,4.971,-0.029

60,1,1.011,0.011

61,5,4.971,-0.029

62,5,4.971,-0.029

63,1,1.011,0.011

64,1,1.011,0.011

65,1,1.011,0.011

66,1,1.011,0.011

67,5,4.971,-0.029

68,5,4.971,-0.029

69,1,1.011,0.011

70,5,4.971,-0.029

71,5,4.971,-0.029

72,5,4.971,-0.029

73,1,1.011,0.011

74,1,1.011,0.011

75,1,1.011,0.011

76,1,1.011,0.011

77,1,1.011,0.011

78,1,1.011,0.011

79,5,4.971,-0.029

80,5,4.971,-0.029

81,1,1.672,0.672

82,1,1.011,0.011

83,5,4.971,-0.029

84,1,1.011,0.011

85,1,1.011,0.011

86,1,1.011,0.011

87,1,1.011,0.011

88,5,4.971,-0.029

89,1,1.011,0.011

90,5,4.971,-0.029

91,1,1.011,0.011

92,1,1.011,0.011

93,1,1.011,0.011

94,1,1.011,0.011

95,5,4.971,-0.029

96,1,1.011,0.011

97,1,1.011,0.011

98,1,1.011,0.011

99,1,1.011,0.011

100,1,1.011,0.011

101,5,4.971,-0.029

102,5,4.971,-0.029

103,1,1.011,0.011

104,1,1.011,0.011

105,5,4.971,-0.029

106,5,4.971,-0.029

107,1,1.012,0.012

108,5,4.971,-0.029

109,1,1.011,0.011

110,1,1.011,0.011

111,1,1.011,0.011

112,1,1.011,0.011

113,5,4.971,-0.029

114,1,1.011,0.011

115,1,1.011,0.011

116,5,4.971,-0.029

117,1,1.011,0.011

118,1,4.971,3.971

119,1,1.011,0.011

120,5,4.971,-0.029

121,1,1.011,0.011

122,5,4.971,-0.029

123,1,1.011,0.011

124,5,4.971,-0.029

125,1,1.011,0.011

126,5,4.946,-0.054

127,1,1.011,0.011

128,5,4.971,-0.029

129,5,4.971,-0.029

130,1,1.011,0.011

131,1,1.011,0.011

132,5,4.75,-0.25

133,1,1.011,0.011

134,5,4.971,-0.029

135,1,1.011,0.011

136,1,1.017,0.017

137,5,4.971,-0.029

138,1,1.016,0.016

139,5,4.971,-0.029

140,1,1.011,0.011

141,5,4.971,-0.029

142,1,1.011,0.011

143,5,4.971,-0.029

144,1,1.011,0.011

145,1,1.011,0.011

146,1,1.011,0.011

147,1,1.011,0.011

148,1,1.011,0.011

149,1,1.011,0.011

150,1,1.011,0.011

151,1,1.011,0.011

152,1,1.011,0.011

153,1,1.146,0.146

154,1,1.011,0.011

155,1,1.011,0.011

156,5,4.971,-0.029

=== Cross-validation ===

=== Summary ===

Correlation coefficient	0.988
Mean absolute error	0.0442
Root mean squared error	0.2963
Relative absolute error	2.4103 %
Root relative squared error	15.4563 %
Total Number of Instances	1561