ETA 10/28/14

The F2A raw confusion matrix for consonants was processed through our MATLAB tools as follows:

importConfusionMatrix('f2acons.txt','f2acons.mat')

diary 'f2acons.txt'

load('f2acons.mat')

clusterAnalysis(cmx)

diary off

This generates both a dendogram and an agglomeration schedule based on the average linkage between groups . The second column in the agglomeration schedule indicates the percent correct in the lowest cluster at that level. This value (usually between 65-and 75%) is typically used for setting the equivalency classes for a standard level

**F2A**

p b m f v T D w r C j s Z t d s z k g n l h a

p 64 21 0 0 0 1 1 9 0 0 0 0 0 8 15 0 0 1 0 0 0 0 0

b 1 98 9 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 5 3 1

m 0 0 117 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 2

f 19 7 3 46 22 7 2 0 0 0 0 0 0 0 2 0 0 0 0 2 0 7 3

v 48 10 0 11 23 4 3 1 0 0 0 0 2 0 1 0 0 1 1 0 12 2 1

T 2 9 1 14 12 16 15 0 0 2 0 0 0 1 3 21 9 1 4 4 1 3 2

D 13 0 0 4 0 10 12 0 0 0 0 0 1 7 4 7 9 14 9 19 2 6 3

w 0 0 0 0 0 0 0 112 4 0 0 0 0 0 0 0 0 0 0 0 4 0 0

r 0 0 0 0 0 0 0 0 119 0 0 0 0 0 0 0 0 0 0 0 1 0 0

C 0 0 0 0 0 0 0 0 0 94 24 1 1 0 0 0 0 0 0 0 0 0 0

j 0 0 0 0 0 0 1 0 0 54 59 0 3 0 0 0 0 0 3 0 0 0 0

s 0 0 0 0 0 0 1 0 0 5 1 81 30 0 0 0 2 0 0 0 0 0 0

Z 0 0 0 0 0 0 1 0 0 14 19 34 51 0 0 0 1 0 0 0 0 0 0

t 0 0 0 0 0 1 3 0 0 0 0 0 0 57 44 0 0 11 4 0 0 0 0

d 0 0 0 0 0 0 1 0 0 0 0 0 0 1 112 0 0 0 5 0 1 0 0

s 0 0 0 14 5 10 10 0 0 0 0 2 4 0 0 49 9 1 0 16 0 0 0

z 1 0 0 10 7 16 6 0 0 6 2 0 5 2 0 12 5 8 1 14 1 17 7

k 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 92 28 0 0 0 0

g 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 21 99 0 0 0 0

n 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 120 0 0 0

l 0 0 0 0 0 0 0 0 73 0 0 1 0 0 0 0 0 0 0 0 46 0 0

h 8 0 2 10 31 0 1 13 1 0 0 0 0 2 0 0 0 6 0 3 3 35 5

a 2 4 41 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 4 8 7 52

load('f2acons.mat')

clusterAnalysis(cmx)

Cluster Analysis:

cophenetic correlation = 0.9103

Spearman's rank correlation = 0.7353

TotalCorrect lowestCorrectCluster, linkVal, clusters

100.000, 100.000, 0.3247, (pbmfvTDwrCjsZtdszkgnlha)

98.768, 98.125, 0.3473, (CjsZ|pbmfvTDwrtdszkgnlha)

97.645, 93.333, 0.3738, (w|pbmfvTDrtdszkgnlha|CjsZ)

96.377, 93.333, 0.3899, (rl|pbmfvTDtdszkgnha|w|CjsZ)

92.790, 87.847, 0.4175, (tdkg|pbmfvTDsznha|rl|w|CjsZ)

90.833, 83.250, 0.4682, (ma|pbfvTDsznh|tdkg|rl|w|CjsZ)

90.109, 83.250, 0.5882, (kg|td|ma|pbfvTDsznh|rl|w|CjsZ)

85.580, 71.875, 0.6055, (fvTDsznh|pb|kg|td|ma|rl|w|CjsZ)

83.986, 71.875, 0.6084, (Cj|sZ|fvTDsznh|pb|kg|td|ma|rl|w)

83.188, 53.333, 0.6659, (p|b|Cj|sZ|fvTDsznh|kg|td|ma|rl|w)

81.087, 53.333, 0.6795, (n|fvTDszh|p|b|Cj|sZ|kg|td|ma|rl|w)

77.138, 45.000, 0.6855, (TDsz|fvh|n|p|b|Cj|sZ|kg|td|ma|rl|w)

74.457, 38.333, 0.7439, (r|l|TDsz|fvh|n|p|b|Cj|sZ|kg|td|ma|w)

72.899, 38.333, 0.7534, (m|a|r|l|TDsz|fvh|n|p|b|Cj|sZ|kg|td|w)

71.268, 38.333, 0.8323, (t|d|m|a|r|l|TDsz|fvh|n|p|b|Cj|sZ|kg|w)

69.493, 38.333, 0.8403, (k|g|t|d|m|a|r|l|TDsz|fvh|n|p|b|Cj|sZ|w)

67.681, 29.167, 0.8830, (h|fv|k|g|t|d|m|a|r|l|TDsz|n|p|b|Cj|sZ|w)

65.181, 27.222, 0.8885, (s|TDz|h|fv|k|g|t|d|m|a|r|l|n|p|b|Cj|sZ|w)

62.862, 27.222, 0.9087, (s|Z|s|TDz|h|fv|k|g|t|d|m|a|r|l|n|p|b|Cj|w)

61.667, 19.167, 0.9455, (f|v|s|Z|s|TDz|h|k|g|t|d|m|a|r|l|n|p|b|Cj|w)

59.855, 13.333, 0.9569, (T|Dz|f|v|s|Z|s|h|k|g|t|d|m|a|r|l|n|p|b|Cj|w)

57.029, 13.333, 0.9695, (C|j|T|Dz|f|v|s|Z|s|h|k|g|t|d|m|a|r|l|n|p|b|w)

56.486, 4.167, 0.0000, (p|b|m|f|v|T|D|w|r|C|j|s|Z|t|d|s|z|k|g|n|l|h|a)

diary off



**VISUAL ONLY**

p b m f v T D w r C j S Z t d s z k g n l h a

p 79 33 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

b 36 53 31 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

m 34 48 38 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

f 0 0 0 87 32 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0

v 0 0 0 59 59 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1

T 0 0 0 0 0 79 37 0 0 0 0 0 3 0 0 0 0 0 0 0 0 1 0

D 0 0 0 0 0 57 62 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0

w 1 0 0 0 0 0 0 113 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0

r 0 0 0 0 0 0 0 7 113 0 0 0 0 0 0 0 0 0 0 0 0 0 0

C 0 0 0 0 0 0 0 0 0 36 48 15 20 0 0 0 0 1 0 0 0 0 0

j 0 0 0 0 0 0 0 0 0 43 39 21 13 0 0 1 3 0 0 0 0 0 0

S 0 0 0 0 0 0 1 1 0 50 22 28 16 0 0 1 1 0 0 0 0 0 0

Z 0 0 0 0 0 0 0 0 0 55 30 16 16 0 0 0 2 0 0 1 0 0 0

t 0 0 0 0 0 0 0 0 0 0 0 0 0 32 27 26 19 1 14 1 0 0 0

d 0 0 0 0 0 0 2 0 0 0 0 0 0 26 24 2 2 7 16 28 9 1 3

s 0 0 0 0 0 0 0 0 0 0 1 0 4 11 6 53 44 0 1 0 0 0 0

z 0 0 0 0 0 0 0 0 0 0 0 0 1 15 10 48 46 0 0 0 0 0 0

k 0 0 1 0 0 0 0 0 0 0 0 0 0 0 2 0 0 59 24 8 3 9 14

g 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 29 27 9 1 33 20

n 0 0 0 0 0 1 0 0 0 0 0 0 0 1 2 0 0 3 5 64 42 2 0

l 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 14 104 0 0

h 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 0 0 5 14 17 5 33 43

a 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 6 2 0 0 38 74

load('vcons.mat')

clusterAnalysis(cmx)

Cluster Analysis:

cophenetic correlation = 0.9808

Spearman's rank correlation = 0.7552

TotalCorrect lowestCorrectCluster, linkVal, clusters

100.000, 100.000, 0.1134, (pbmfvTDwrCjSZtdszkgnlha)

99.928, 99.907, 0.1300, (pbmwr|fvTDCjSZtdszkgnlha)

99.819, 98.750, 0.2061, (fv|TDCjSZtdszkgnlha|pbmwr)

99.783, 98.750, 0.2321, (pbm|wr|fv|TDCjSZtdszkgnlha)

99.058, 98.333, 0.2376, (tdszkgnlha|TDCjSZ|pbm|wr|fv)

98.877, 97.500, 0.2472, (TD|CjSZ|tdszkgnlha|pbm|wr|fv)

95.580, 81.458, 0.2574, (tdsz|kgnlha|TD|CjSZ|pbm|wr|fv)

95.109, 81.458, 0.2602, (w|r|tdsz|kgnlha|TD|CjSZ|pbm|fv)

93.152, 81.458, 0.3060, (nl|kgha|w|r|tdsz|TD|CjSZ|pbm|fv)

89.420, 57.917, 0.3620, (ha|kg|nl|w|r|tdsz|TD|CjSZ|pbm|fv)

86.123, 45.417, 0.4263, (sz|td|ha|kg|nl|w|r|TD|CjSZ|pbm|fv)

84.094, 45.417, 0.5691, (n|l|sz|td|ha|kg|w|r|TD|CjSZ|pbm|fv)

82.174, 22.500, 0.5973, (k|g|n|l|sz|td|ha|w|r|TD|CjSZ|pbm|fv)

78.152, 22.500, 0.6384, (p|bm|k|g|n|l|sz|td|ha|w|r|TD|CjSZ|fv)

72.717, 13.333, 0.8188, (Z|CjS|p|bm|k|g|n|l|sz|td|ha|w|r|TD|fv)

69.783, 13.333, 0.8917, (h|a|Z|CjS|p|bm|k|g|n|l|sz|td|w|r|TD|fv)

67.862, 13.333, 0.9148, (t|d|h|a|Z|CjS|p|bm|k|g|n|l|sz|w|r|TD|fv)

64.457, 13.333, 0.9845, (T|D|t|d|h|a|Z|CjS|p|bm|k|g|n|l|sz|w|r|fv)

61.159, 13.333, 0.9866, (f|v|T|D|t|d|h|a|Z|CjS|p|bm|k|g|n|l|sz|w|r)

56.304, 13.333, 0.9977, (j|CS|f|v|T|D|t|d|h|a|Z|p|bm|k|g|n|l|sz|w|r)

53.442, 13.333, 0.9984, (b|m|j|CS|f|v|T|D|t|d|h|a|Z|p|k|g|n|l|sz|w|r)

50.109, 13.333, 0.9988, (s|z|b|m|j|CS|f|v|T|D|t|d|h|a|Z|p|k|g|n|l|w|r)

47.754, 13.333, 0.0000, (p|b|m|f|v|T|D|w|r|C|j|S|Z|t|d|s|z|k|g|n|l|h|a)

diary off



**F2AV Cons**

p b m f v T D w r C j s Z t d s z k g n l h a

p 107 11 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

b 3 117 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

m 0 0 119 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

f 0 0 0 87 34 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

v 2 0 0 37 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

T 0 0 0 0 0 82 32 0 0 0 0 0 0 0 0 4 1 0 0 0 0 0 0

D 0 0 0 1 0 78 38 0 0 0 0 0 1 1 0 1 0 0 1 0 0 0 0

w 0 0 0 0 0 0 0 123 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

r 0 0 0 0 0 0 0 0 122 0 0 0 0 0 0 0 0 0 0 0 0 0 0

C 0 0 0 0 0 0 1 0 0 94 24 0 0 0 0 0 0 0 0 0 0 0 0

j 0 0 0 0 0 0 0 0 0 38 80 0 0 0 0 0 0 0 0 0 0 0 0

s 0 0 0 0 0 1 0 0 0 3 6 73 35 0 0 2 1 0 0 0 0 0 0

Z 0 0 0 0 0 0 0 0 0 13 15 25 69 0 0 0 0 0 0 0 0 0 0

t 0 0 0 0 0 0 0 0 0 0 0 0 0 78 35 0 0 7 1 0 0 0 0

d 0 0 0 0 0 0 0 0 0 0 0 0 0 3 116 0 0 0 0 0 0 0 0

s 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 101 12 0 0 1 0 0 0

z 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 56 56 0 0 4 0 2 1

k 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 108 13 0 0 0 0

g 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 17 102 0 0 0 0

n 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 121 0 0 0

l 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 114 0 0

h 1 0 0 1 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 4 3 103 5

a 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 119

load('f2avcons.mat')

clusterAnalysis(cmx)

Cluster Analysis:

cophenetic correlation = 0.9971

Spearman's rank correlation = 0.5200

TotalCorrect lowestCorrectCluster, linkVal, clusters

100.000, 100.000, 0.1248, (pbmfvTDwrCjsZtdszkgnlha)

99.964, 99.962, 0.4138, (r|pbmfvTDwCjsZtdszkgnlha)

99.783, 99.705, 0.4172, (pbmfv|TDwCjsZtdszkgnlha|r)

99.746, 99.634, 0.4251, (w|TDCjsZtdszkgnlha|pbmfv|r)

99.601, 99.233, 0.4532, (tdkg|TDCjsZsznlha|w|pbmfv|r)

99.384, 98.742, 0.7058, (CjsZ|TDsznlha|tdkg|w|pbmfv|r)

99.312, 98.742, 0.7509, (fv|pbm|CjsZ|TDsznlha|tdkg|w|r)

99.058, 97.191, 0.8665, (TDszn|lha|fv|pbm|CjsZ|tdkg|w|r)

98.949, 95.021, 0.8865, (l|ha|TDszn|fv|pbm|CjsZ|tdkg|w|r)

98.841, 95.021, 0.9336, (m|pb|l|ha|TDszn|fv|CjsZ|tdkg|w|r)

98.551, 95.021, 0.9572, (TD|szn|m|pb|l|ha|fv|CjsZ|tdkg|w|r)

98.261, 95.021, 0.9676, (td|kg|TD|szn|m|pb|l|ha|fv|CjsZ|w|r)

98.080, 94.937, 0.9725, (n|sz|td|kg|TD|m|pb|l|ha|fv|CjsZ|w|r)

97.826, 86.555, 0.9789, (h|a|n|sz|td|kg|TD|m|pb|l|fv|CjsZ|w|r)

97.319, 86.555, 0.9790, (p|b|h|a|n|sz|td|kg|TD|m|l|fv|CjsZ|w|r)

95.978, 83.128, 0.9892, (sZ|Cj|p|b|h|a|n|sz|td|kg|TD|m|l|fv|w|r)

94.891, 83.128, 0.9937, (k|g|sZ|Cj|p|b|h|a|n|sz|td|TD|m|l|fv|w|r)

93.514, 64.463, 0.9950, (t|d|k|g|sZ|Cj|p|b|h|a|n|sz|TD|m|l|fv|w|r)

91.268, 64.463, 0.9970, (C|j|t|d|k|g|sZ|p|b|h|a|n|sz|TD|m|l|fv|w|r)

88.804, 45.902, 0.9979, (s|z|C|j|t|d|k|g|sZ|p|b|h|a|n|TD|m|l|fv|w|r)

86.232, 45.902, 0.9983, (f|v|s|z|C|j|t|d|k|g|sZ|p|b|h|a|n|TD|m|l|w|r)

84.058, 45.902, 0.9996, (s|Z|f|v|s|z|C|j|t|d|k|g|p|b|h|a|n|TD|m|l|w|r)

80.072, 31.405, 0.0000, (p|b|m|f|v|T|D|w|r|C|j|s|Z|t|d|s|z|k|g|n|l|h|a)

diary off

