=== Run information ===

Scheme: weka.classifiers.meta.FilteredClassifier -F "weka.filters.supervised.attribute.Discretize -R first-last -precision 6" -W weka.classifiers.rules.JRip -- -F 3 -N 2.0 -O 2 -S 1

Relation: audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 113

Attributes: 70

age\_gt\_60

air

airBoneGap

ar\_c

ar\_u

bone

boneAbnormal

bser

history\_buzzing

history\_dizziness

history\_fluctuating

history\_fullness

history\_heredity

history\_nausea

history\_noise

history\_recruitment

history\_ringing

history\_roaring

history\_vomiting

late\_wave\_poor

m\_at\_2k

m\_cond\_lt\_1k

m\_gt\_1k

m\_m\_gt\_2k

m\_m\_sn

m\_m\_sn\_gt\_1k

m\_m\_sn\_gt\_2k

m\_m\_sn\_gt\_500

m\_p\_sn\_gt\_2k

m\_s\_gt\_500

m\_s\_sn

m\_s\_sn\_gt\_1k

m\_s\_sn\_gt\_2k

m\_s\_sn\_gt\_3k

m\_s\_sn\_gt\_4k

m\_sn\_2\_3k

m\_sn\_gt\_1k

m\_sn\_gt\_2k

m\_sn\_gt\_3k

m\_sn\_gt\_4k

m\_sn\_gt\_500

m\_sn\_gt\_6k

m\_sn\_lt\_1k

m\_sn\_lt\_2k

m\_sn\_lt\_3k

middle\_wave\_poor

mod\_gt\_4k

mod\_mixed

mod\_s\_mixed

mod\_s\_sn\_gt\_500

mod\_sn

mod\_sn\_gt\_1k

mod\_sn\_gt\_2k

mod\_sn\_gt\_3k

mod\_sn\_gt\_4k

mod\_sn\_gt\_500

notch\_4k

notch\_at\_4k

o\_ar\_c

o\_ar\_u

s\_sn\_gt\_1k

s\_sn\_gt\_2k

s\_sn\_gt\_4k

speech

static\_normal

tymp

viith\_nerve\_signs

wave\_V\_delayed

waveform\_ItoV\_prolonged

class

Test mode: evaluate on training data

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

FilteredClassifier using weka.classifiers.rules.JRip -F 3 -N 2.0 -O 2 -S 1 on data filtered through weka.filters.supervised.attribute.Discretize -R first-last -precision 6

Filtered Header

@relation audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute age\_gt\_60 {f,t}

@attribute air {mild,moderate,normal,profound,severe}

@attribute airBoneGap {f,t}

@attribute ar\_c {absent,elevated,normal}

@attribute ar\_u {absent,elevated,normal}

@attribute bone {mild,moderate,normal,unmeasured}

@attribute boneAbnormal {f,t}

@attribute bser {degraded,normal}

@attribute history\_buzzing {f,t}

@attribute history\_dizziness {f,t}

@attribute history\_fluctuating {f,t}

@attribute history\_fullness {f,t}

@attribute history\_heredity {f,t}

@attribute history\_nausea {f,t}

@attribute history\_noise {f,t}

@attribute history\_recruitment {f,t}

@attribute history\_ringing {f,t}

@attribute history\_roaring {f,t}

@attribute history\_vomiting {f,t}

@attribute late\_wave\_poor {f,t}

@attribute m\_at\_2k {f,t}

@attribute m\_cond\_lt\_1k {f,t}

@attribute m\_gt\_1k {f,t}

@attribute m\_m\_gt\_2k {f,t}

@attribute m\_m\_sn {f,t}

@attribute m\_m\_sn\_gt\_1k {f,t}

@attribute m\_m\_sn\_gt\_2k {f,t}

@attribute m\_m\_sn\_gt\_500 {f,t}

@attribute m\_p\_sn\_gt\_2k {f,t}

@attribute m\_s\_gt\_500 {f,t}

@attribute m\_s\_sn {f,t}

@attribute m\_s\_sn\_gt\_1k {f,t}

@attribute m\_s\_sn\_gt\_2k {f,t}

@attribute m\_s\_sn\_gt\_3k {f,t}

@attribute m\_s\_sn\_gt\_4k {f,t}

@attribute m\_sn\_2\_3k {f,t}

@attribute m\_sn\_gt\_1k {f,t}

@attribute m\_sn\_gt\_2k {f,t}

@attribute m\_sn\_gt\_3k {f,t}

@attribute m\_sn\_gt\_4k {f,t}

@attribute m\_sn\_gt\_500 {f,t}

@attribute m\_sn\_gt\_6k {f,t}

@attribute m\_sn\_lt\_1k {f,t}

@attribute m\_sn\_lt\_2k {f,t}

@attribute m\_sn\_lt\_3k {f,t}

@attribute middle\_wave\_poor {f,t}

@attribute mod\_gt\_4k {f,t}

@attribute mod\_mixed {f,t}

@attribute mod\_s\_mixed {f,t}

@attribute mod\_s\_sn\_gt\_500 {f,t}

@attribute mod\_sn {f,t}

@attribute mod\_sn\_gt\_1k {f,t}

@attribute mod\_sn\_gt\_2k {f,t}

@attribute mod\_sn\_gt\_3k {f,t}

@attribute mod\_sn\_gt\_4k {f,t}

@attribute mod\_sn\_gt\_500 {f,t}

@attribute notch\_4k {f,t}

@attribute notch\_at\_4k {f,t}

@attribute o\_ar\_c {absent,elevated,normal}

@attribute o\_ar\_u {absent,elevated,normal}

@attribute s\_sn\_gt\_1k {f,t}

@attribute s\_sn\_gt\_2k {f,t}

@attribute s\_sn\_gt\_4k {f,t}

@attribute speech {good,normal,poor,unmeasured,very\_good,very\_poor}

@attribute static\_normal {f,t}

@attribute tymp {a,ad,as,b,c}

@attribute viith\_nerve\_signs {f,t}

@attribute wave\_V\_delayed {f,t}

@attribute waveform\_ItoV\_prolonged {f,t}

@attribute class {acoustic\_neuroma,bells\_palsy,cochlear\_age,cochlear\_age\_and\_noise,cochlear\_age\_plus\_poss\_menieres,cochlear\_noise\_and\_heredity,cochlear\_poss\_noise,cochlear\_unknown,conductive\_discontinuity,conductive\_fixation,mixed\_cochlear\_age\_fixation,mixed\_cochlear\_age\_otitis\_media,mixed\_cochlear\_age\_s\_om,mixed\_cochlear\_unk\_discontinuity,mixed\_cochlear\_unk\_fixation,mixed\_cochlear\_unk\_ser\_om,mixed\_poss\_central\_om,mixed\_poss\_noise\_om,normal\_ear,otitis\_media,poss\_central,possible\_brainstem\_disorder,possible\_menieres,retrocochlear\_unknown}

@data

Classifier Model

JRIP rules:

===========

(tymp = as) and (bone = normal) => class=conductive\_fixation (3.0/0.0)

(history\_fluctuating = t) => class=possible\_menieres (4.0/0.0)

(tymp = as) and (age\_gt\_60 = f) => class=mixed\_cochlear\_unk\_fixation (5.0/0.0)

(notch\_at\_4k = t) => class=cochlear\_poss\_noise (9.0/2.0)

(history\_noise = t) and (age\_gt\_60 = t) => class=cochlear\_age\_and\_noise (12.0/2.0)

(bone = normal) => class=normal\_ear (13.0/5.0)

(age\_gt\_60 = f) => class=cochlear\_unknown (38.0/15.0)

=> class=cochlear\_age (29.0/3.0)

Number of Rules : 8

Time taken to build model: 0.02 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0 seconds

=== Summary ===

Correctly Classified Instances 86 76.1062 %

Incorrectly Classified Instances 27 23.8938 %

Kappa statistic 0.7122

Mean absolute error 0.0319

Root mean squared error 0.1262

Relative absolute error 43.7121 %

Root relative squared error 66.6779 %

Total Number of Instances 113

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.000 0.000 0.000 0.000 0.000 0.000 0.835 0.026 acoustic\_neuroma

0.000 0.000 0.000 0.000 0.000 0.000 0.835 0.026 bells\_palsy

0.897 0.036 0.897 0.897 0.897 0.861 0.970 0.869 cochlear\_age

0.909 0.020 0.833 0.909 0.870 0.856 0.986 0.805 cochlear\_age\_and\_noise

0.000 0.000 0.000 0.000 0.000 0.000 ? ? cochlear\_age\_plus\_poss\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.835 0.026 cochlear\_noise\_and\_heredity

0.700 0.019 0.778 0.700 0.737 0.714 0.936 0.608 cochlear\_poss\_noise

0.958 0.169 0.605 0.958 0.742 0.684 0.909 0.600 cochlear\_unknown

0.000 0.000 0.000 0.000 0.000 0.000 0.835 0.026 conductive\_discontinuity

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 conductive\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.875 0.034 mixed\_cochlear\_age\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.878 0.069 mixed\_cochlear\_age\_otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 0.946 0.077 mixed\_cochlear\_age\_s\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.946 0.077 mixed\_cochlear\_unk\_discontinuity

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 mixed\_cochlear\_unk\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.835 0.026 mixed\_cochlear\_unk\_ser\_om

0.000 0.000 0.000 0.000 0.000 0.000 ? ? mixed\_poss\_central\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.835 0.026 mixed\_poss\_noise\_om

0.727 0.049 0.615 0.727 0.667 0.630 0.922 0.506 normal\_ear

0.000 0.000 0.000 0.000 0.000 0.000 0.836 0.058 otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 ? ? poss\_central

0.000 0.000 0.000 0.000 0.000 0.000 0.838 0.053 possible\_brainstem\_disorder

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 possible\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.964 0.111 retrocochlear\_unknown

Weighted Avg. 0.761 0.053 0.675 0.761 0.709 0.680 0.939 0.645

=== Confusion Matrix ===

a b c d e f g h i j k l m n o p q r s t u v w x <-- classified as

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | a = acoustic\_neuroma

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | b = bells\_palsy

0 0 26 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | c = cochlear\_age

0 0 0 10 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | d = cochlear\_age\_and\_noise

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | e = cochlear\_age\_plus\_poss\_menieres

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | f = cochlear\_noise\_and\_heredity

0 0 0 0 0 0 7 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | g = cochlear\_poss\_noise

0 0 0 0 0 0 0 23 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | h = cochlear\_unknown

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | i = conductive\_discontinuity

0 0 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | j = conductive\_fixation

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | k = mixed\_cochlear\_age\_fixation

0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | l = mixed\_cochlear\_age\_otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | m = mixed\_cochlear\_age\_s\_om

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | n = mixed\_cochlear\_unk\_discontinuity

0 0 0 0 0 0 0 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 0 0 | o = mixed\_cochlear\_unk\_fixation

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | p = mixed\_cochlear\_unk\_ser\_om

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | q = mixed\_poss\_central\_om

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | r = mixed\_poss\_noise\_om

0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 8 0 0 0 0 0 | s = normal\_ear

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | t = otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | u = poss\_central

0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | v = possible\_brainstem\_disorder

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 0 | w = possible\_menieres

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | x = retrocochlear\_unknown

=== Run information ===

Scheme: weka.classifiers.meta.FilteredClassifier -F "weka.filters.supervised.attribute.Discretize -R first-last -precision 6" -W weka.classifiers.rules.JRip -- -F 3 -N 2.0 -O 2 -S 1

Relation: audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 113

Attributes: 70

age\_gt\_60

air

airBoneGap

ar\_c

ar\_u

bone

boneAbnormal

bser

history\_buzzing

history\_dizziness

history\_fluctuating

history\_fullness

history\_heredity

history\_nausea

history\_noise

history\_recruitment

history\_ringing

history\_roaring

history\_vomiting

late\_wave\_poor

m\_at\_2k

m\_cond\_lt\_1k

m\_gt\_1k

m\_m\_gt\_2k

m\_m\_sn

m\_m\_sn\_gt\_1k

m\_m\_sn\_gt\_2k

m\_m\_sn\_gt\_500

m\_p\_sn\_gt\_2k

m\_s\_gt\_500

m\_s\_sn

m\_s\_sn\_gt\_1k

m\_s\_sn\_gt\_2k

m\_s\_sn\_gt\_3k

m\_s\_sn\_gt\_4k

m\_sn\_2\_3k

m\_sn\_gt\_1k

m\_sn\_gt\_2k

m\_sn\_gt\_3k

m\_sn\_gt\_4k

m\_sn\_gt\_500

m\_sn\_gt\_6k

m\_sn\_lt\_1k

m\_sn\_lt\_2k

m\_sn\_lt\_3k

middle\_wave\_poor

mod\_gt\_4k

mod\_mixed

mod\_s\_mixed

mod\_s\_sn\_gt\_500

mod\_sn

mod\_sn\_gt\_1k

mod\_sn\_gt\_2k

mod\_sn\_gt\_3k

mod\_sn\_gt\_4k

mod\_sn\_gt\_500

notch\_4k

notch\_at\_4k

o\_ar\_c

o\_ar\_u

s\_sn\_gt\_1k

s\_sn\_gt\_2k

s\_sn\_gt\_4k

speech

static\_normal

tymp

viith\_nerve\_signs

wave\_V\_delayed

waveform\_ItoV\_prolonged

class

Test mode: 5-fold cross-validation

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

FilteredClassifier using weka.classifiers.rules.JRip -F 3 -N 2.0 -O 2 -S 1 on data filtered through weka.filters.supervised.attribute.Discretize -R first-last -precision 6

Filtered Header

@relation audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute age\_gt\_60 {f,t}

@attribute air {mild,moderate,normal,profound,severe}

@attribute airBoneGap {f,t}

@attribute ar\_c {absent,elevated,normal}

@attribute ar\_u {absent,elevated,normal}

@attribute bone {mild,moderate,normal,unmeasured}

@attribute boneAbnormal {f,t}

@attribute bser {degraded,normal}

@attribute history\_buzzing {f,t}

@attribute history\_dizziness {f,t}

@attribute history\_fluctuating {f,t}

@attribute history\_fullness {f,t}

@attribute history\_heredity {f,t}

@attribute history\_nausea {f,t}

@attribute history\_noise {f,t}

@attribute history\_recruitment {f,t}

@attribute history\_ringing {f,t}

@attribute history\_roaring {f,t}

@attribute history\_vomiting {f,t}

@attribute late\_wave\_poor {f,t}

@attribute m\_at\_2k {f,t}

@attribute m\_cond\_lt\_1k {f,t}

@attribute m\_gt\_1k {f,t}

@attribute m\_m\_gt\_2k {f,t}

@attribute m\_m\_sn {f,t}

@attribute m\_m\_sn\_gt\_1k {f,t}

@attribute m\_m\_sn\_gt\_2k {f,t}

@attribute m\_m\_sn\_gt\_500 {f,t}

@attribute m\_p\_sn\_gt\_2k {f,t}

@attribute m\_s\_gt\_500 {f,t}

@attribute m\_s\_sn {f,t}

@attribute m\_s\_sn\_gt\_1k {f,t}

@attribute m\_s\_sn\_gt\_2k {f,t}

@attribute m\_s\_sn\_gt\_3k {f,t}

@attribute m\_s\_sn\_gt\_4k {f,t}

@attribute m\_sn\_2\_3k {f,t}

@attribute m\_sn\_gt\_1k {f,t}

@attribute m\_sn\_gt\_2k {f,t}

@attribute m\_sn\_gt\_3k {f,t}

@attribute m\_sn\_gt\_4k {f,t}

@attribute m\_sn\_gt\_500 {f,t}

@attribute m\_sn\_gt\_6k {f,t}

@attribute m\_sn\_lt\_1k {f,t}

@attribute m\_sn\_lt\_2k {f,t}

@attribute m\_sn\_lt\_3k {f,t}

@attribute middle\_wave\_poor {f,t}

@attribute mod\_gt\_4k {f,t}

@attribute mod\_mixed {f,t}

@attribute mod\_s\_mixed {f,t}

@attribute mod\_s\_sn\_gt\_500 {f,t}

@attribute mod\_sn {f,t}

@attribute mod\_sn\_gt\_1k {f,t}

@attribute mod\_sn\_gt\_2k {f,t}

@attribute mod\_sn\_gt\_3k {f,t}

@attribute mod\_sn\_gt\_4k {f,t}

@attribute mod\_sn\_gt\_500 {f,t}

@attribute notch\_4k {f,t}

@attribute notch\_at\_4k {f,t}

@attribute o\_ar\_c {absent,elevated,normal}

@attribute o\_ar\_u {absent,elevated,normal}

@attribute s\_sn\_gt\_1k {f,t}

@attribute s\_sn\_gt\_2k {f,t}

@attribute s\_sn\_gt\_4k {f,t}

@attribute speech {good,normal,poor,unmeasured,very\_good,very\_poor}

@attribute static\_normal {f,t}

@attribute tymp {a,ad,as,b,c}

@attribute viith\_nerve\_signs {f,t}

@attribute wave\_V\_delayed {f,t}

@attribute waveform\_ItoV\_prolonged {f,t}

@attribute class {acoustic\_neuroma,bells\_palsy,cochlear\_age,cochlear\_age\_and\_noise,cochlear\_age\_plus\_poss\_menieres,cochlear\_noise\_and\_heredity,cochlear\_poss\_noise,cochlear\_unknown,conductive\_discontinuity,conductive\_fixation,mixed\_cochlear\_age\_fixation,mixed\_cochlear\_age\_otitis\_media,mixed\_cochlear\_age\_s\_om,mixed\_cochlear\_unk\_discontinuity,mixed\_cochlear\_unk\_fixation,mixed\_cochlear\_unk\_ser\_om,mixed\_poss\_central\_om,mixed\_poss\_noise\_om,normal\_ear,otitis\_media,poss\_central,possible\_brainstem\_disorder,possible\_menieres,retrocochlear\_unknown}

@data

Classifier Model

JRIP rules:

===========

(tymp = as) and (bone = normal) => class=conductive\_fixation (3.0/0.0)

(history\_fluctuating = t) => class=possible\_menieres (4.0/0.0)

(tymp = as) and (age\_gt\_60 = f) => class=mixed\_cochlear\_unk\_fixation (5.0/0.0)

(notch\_at\_4k = t) => class=cochlear\_poss\_noise (9.0/2.0)

(history\_noise = t) and (age\_gt\_60 = t) => class=cochlear\_age\_and\_noise (12.0/2.0)

(bone = normal) => class=normal\_ear (13.0/5.0)

(age\_gt\_60 = f) => class=cochlear\_unknown (38.0/15.0)

=> class=cochlear\_age (29.0/3.0)

Number of Rules : 8

Time taken to build model: 0.02 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 72 63.7168 %

Incorrectly Classified Instances 41 36.2832 %

Kappa statistic 0.5619

Mean absolute error 0.0415

Root mean squared error 0.1579

Relative absolute error 56.6408 %

Root relative squared error 83.2441 %

Total Number of Instances 113

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.000 0.000 0.000 0.000 0.000 0.000 0.366 0.009 acoustic\_neuroma

0.000 0.000 0.000 0.000 0.000 0.000 0.388 0.009 bells\_palsy

0.897 0.190 0.619 0.897 0.732 0.638 0.895 0.728 cochlear\_age

0.909 0.010 0.909 0.909 0.909 0.899 0.947 0.826 cochlear\_age\_and\_noise

0.000 0.000 0.000 0.000 0.000 0.000 ? ? cochlear\_age\_plus\_poss\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.415 0.009 cochlear\_noise\_and\_heredity

0.700 0.078 0.467 0.700 0.560 0.521 0.882 0.483 cochlear\_poss\_noise

0.583 0.090 0.636 0.583 0.609 0.510 0.787 0.508 cochlear\_unknown

0.000 0.000 0.000 0.000 0.000 0.000 0.348 0.009 conductive\_discontinuity

0.333 0.000 1.000 0.333 0.500 0.572 0.939 0.432 conductive\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.371 0.009 mixed\_cochlear\_age\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.491 0.021 mixed\_cochlear\_age\_otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 0.379 0.009 mixed\_cochlear\_age\_s\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.344 0.009 mixed\_cochlear\_unk\_discontinuity

0.800 0.009 0.800 0.800 0.800 0.791 0.886 0.719 mixed\_cochlear\_unk\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.397 0.009 mixed\_cochlear\_unk\_ser\_om

0.000 0.000 0.000 0.000 0.000 0.000 ? ? mixed\_poss\_central\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.348 0.009 mixed\_poss\_noise\_om

0.636 0.049 0.583 0.636 0.609 0.565 0.857 0.432 normal\_ear

0.000 0.000 0.000 0.000 0.000 0.000 0.356 0.018 otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 ? ? poss\_central

0.000 0.018 0.000 0.000 0.000 -0.018 0.858 0.078 possible\_brainstem\_disorder

0.750 0.000 1.000 0.750 0.857 0.862 0.875 0.759 possible\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.469 0.009 retrocochlear\_unknown

Weighted Avg. 0.637 0.081 0.578 0.637 0.594 0.541 0.810 0.533

=== Confusion Matrix ===

a b c d e f g h i j k l m n o p q r s t u v w x <-- classified as

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | a = acoustic\_neuroma

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | b = bells\_palsy

0 0 26 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0 | c = cochlear\_age

0 0 0 10 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | d = cochlear\_age\_and\_noise

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | e = cochlear\_age\_plus\_poss\_menieres

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | f = cochlear\_noise\_and\_heredity

0 0 1 0 0 0 7 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | g = cochlear\_poss\_noise

0 0 6 0 0 0 2 14 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 | h = cochlear\_unknown

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | i = conductive\_discontinuity

0 0 2 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | j = conductive\_fixation

0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | k = mixed\_cochlear\_age\_fixation

0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | l = mixed\_cochlear\_age\_otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | m = mixed\_cochlear\_age\_s\_om

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | n = mixed\_cochlear\_unk\_discontinuity

0 0 1 0 0 0 0 0 0 0 0 0 0 0 4 0 0 0 0 0 0 0 0 0 | o = mixed\_cochlear\_unk\_fixation

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | p = mixed\_cochlear\_unk\_ser\_om

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | q = mixed\_poss\_central\_om

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | r = mixed\_poss\_noise\_om

0 0 2 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 7 0 0 0 0 0 | s = normal\_ear

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | t = otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | u = poss\_central

0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | v = possible\_brainstem\_disorder

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 3 0 | w = possible\_menieres

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | x = retrocochlear\_unknown

=== Run information ===

Scheme: weka.classifiers.meta.FilteredClassifier -F "weka.filters.supervised.attribute.Discretize -R first-last -precision 6" -W weka.classifiers.rules.JRip -- -F 3 -N 2.0 -O 2 -S 1

Relation: audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 113

Attributes: 70

age\_gt\_60

air

airBoneGap

ar\_c

ar\_u

bone

boneAbnormal

bser

history\_buzzing

history\_dizziness

history\_fluctuating

history\_fullness

history\_heredity

history\_nausea

history\_noise

history\_recruitment

history\_ringing

history\_roaring

history\_vomiting

late\_wave\_poor

m\_at\_2k

m\_cond\_lt\_1k

m\_gt\_1k

m\_m\_gt\_2k

m\_m\_sn

m\_m\_sn\_gt\_1k

m\_m\_sn\_gt\_2k

m\_m\_sn\_gt\_500

m\_p\_sn\_gt\_2k

m\_s\_gt\_500

m\_s\_sn

m\_s\_sn\_gt\_1k

m\_s\_sn\_gt\_2k

m\_s\_sn\_gt\_3k

m\_s\_sn\_gt\_4k

m\_sn\_2\_3k

m\_sn\_gt\_1k

m\_sn\_gt\_2k

m\_sn\_gt\_3k

m\_sn\_gt\_4k

m\_sn\_gt\_500

m\_sn\_gt\_6k

m\_sn\_lt\_1k

m\_sn\_lt\_2k

m\_sn\_lt\_3k

middle\_wave\_poor

mod\_gt\_4k

mod\_mixed

mod\_s\_mixed

mod\_s\_sn\_gt\_500

mod\_sn

mod\_sn\_gt\_1k

mod\_sn\_gt\_2k

mod\_sn\_gt\_3k

mod\_sn\_gt\_4k

mod\_sn\_gt\_500

notch\_4k

notch\_at\_4k

o\_ar\_c

o\_ar\_u

s\_sn\_gt\_1k

s\_sn\_gt\_2k

s\_sn\_gt\_4k

speech

static\_normal

tymp

viith\_nerve\_signs

wave\_V\_delayed

waveform\_ItoV\_prolonged

class

Test mode: 10-fold cross-validation

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

FilteredClassifier using weka.classifiers.rules.JRip -F 3 -N 2.0 -O 2 -S 1 on data filtered through weka.filters.supervised.attribute.Discretize -R first-last -precision 6

Filtered Header

@relation audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute age\_gt\_60 {f,t}

@attribute air {mild,moderate,normal,profound,severe}

@attribute airBoneGap {f,t}

@attribute ar\_c {absent,elevated,normal}

@attribute ar\_u {absent,elevated,normal}

@attribute bone {mild,moderate,normal,unmeasured}

@attribute boneAbnormal {f,t}

@attribute bser {degraded,normal}

@attribute history\_buzzing {f,t}

@attribute history\_dizziness {f,t}

@attribute history\_fluctuating {f,t}

@attribute history\_fullness {f,t}

@attribute history\_heredity {f,t}

@attribute history\_nausea {f,t}

@attribute history\_noise {f,t}

@attribute history\_recruitment {f,t}

@attribute history\_ringing {f,t}

@attribute history\_roaring {f,t}

@attribute history\_vomiting {f,t}

@attribute late\_wave\_poor {f,t}

@attribute m\_at\_2k {f,t}

@attribute m\_cond\_lt\_1k {f,t}

@attribute m\_gt\_1k {f,t}

@attribute m\_m\_gt\_2k {f,t}

@attribute m\_m\_sn {f,t}

@attribute m\_m\_sn\_gt\_1k {f,t}

@attribute m\_m\_sn\_gt\_2k {f,t}

@attribute m\_m\_sn\_gt\_500 {f,t}

@attribute m\_p\_sn\_gt\_2k {f,t}

@attribute m\_s\_gt\_500 {f,t}

@attribute m\_s\_sn {f,t}

@attribute m\_s\_sn\_gt\_1k {f,t}

@attribute m\_s\_sn\_gt\_2k {f,t}

@attribute m\_s\_sn\_gt\_3k {f,t}

@attribute m\_s\_sn\_gt\_4k {f,t}

@attribute m\_sn\_2\_3k {f,t}

@attribute m\_sn\_gt\_1k {f,t}

@attribute m\_sn\_gt\_2k {f,t}

@attribute m\_sn\_gt\_3k {f,t}

@attribute m\_sn\_gt\_4k {f,t}

@attribute m\_sn\_gt\_500 {f,t}

@attribute m\_sn\_gt\_6k {f,t}

@attribute m\_sn\_lt\_1k {f,t}

@attribute m\_sn\_lt\_2k {f,t}

@attribute m\_sn\_lt\_3k {f,t}

@attribute middle\_wave\_poor {f,t}

@attribute mod\_gt\_4k {f,t}

@attribute mod\_mixed {f,t}

@attribute mod\_s\_mixed {f,t}

@attribute mod\_s\_sn\_gt\_500 {f,t}

@attribute mod\_sn {f,t}

@attribute mod\_sn\_gt\_1k {f,t}

@attribute mod\_sn\_gt\_2k {f,t}

@attribute mod\_sn\_gt\_3k {f,t}

@attribute mod\_sn\_gt\_4k {f,t}

@attribute mod\_sn\_gt\_500 {f,t}

@attribute notch\_4k {f,t}

@attribute notch\_at\_4k {f,t}

@attribute o\_ar\_c {absent,elevated,normal}

@attribute o\_ar\_u {absent,elevated,normal}

@attribute s\_sn\_gt\_1k {f,t}

@attribute s\_sn\_gt\_2k {f,t}

@attribute s\_sn\_gt\_4k {f,t}

@attribute speech {good,normal,poor,unmeasured,very\_good,very\_poor}

@attribute static\_normal {f,t}

@attribute tymp {a,ad,as,b,c}

@attribute viith\_nerve\_signs {f,t}

@attribute wave\_V\_delayed {f,t}

@attribute waveform\_ItoV\_prolonged {f,t}

@attribute class {acoustic\_neuroma,bells\_palsy,cochlear\_age,cochlear\_age\_and\_noise,cochlear\_age\_plus\_poss\_menieres,cochlear\_noise\_and\_heredity,cochlear\_poss\_noise,cochlear\_unknown,conductive\_discontinuity,conductive\_fixation,mixed\_cochlear\_age\_fixation,mixed\_cochlear\_age\_otitis\_media,mixed\_cochlear\_age\_s\_om,mixed\_cochlear\_unk\_discontinuity,mixed\_cochlear\_unk\_fixation,mixed\_cochlear\_unk\_ser\_om,mixed\_poss\_central\_om,mixed\_poss\_noise\_om,normal\_ear,otitis\_media,poss\_central,possible\_brainstem\_disorder,possible\_menieres,retrocochlear\_unknown}

@data

Classifier Model

JRIP rules:

===========

(tymp = as) and (bone = normal) => class=conductive\_fixation (3.0/0.0)

(history\_fluctuating = t) => class=possible\_menieres (4.0/0.0)

(tymp = as) and (age\_gt\_60 = f) => class=mixed\_cochlear\_unk\_fixation (5.0/0.0)

(notch\_at\_4k = t) => class=cochlear\_poss\_noise (9.0/2.0)

(history\_noise = t) and (age\_gt\_60 = t) => class=cochlear\_age\_and\_noise (12.0/2.0)

(bone = normal) => class=normal\_ear (13.0/5.0)

(age\_gt\_60 = f) => class=cochlear\_unknown (38.0/15.0)

=> class=cochlear\_age (29.0/3.0)

Number of Rules : 8

Time taken to build model: 0.02 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 78 69.0265 %

Incorrectly Classified Instances 35 30.9735 %

Kappa statistic 0.628

Mean absolute error 0.0369

Root mean squared error 0.1463

Relative absolute error 50.3961 %

Root relative squared error 77.0942 %

Total Number of Instances 113

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.000 0.000 0.000 0.000 0.000 0.000 0.353 0.009 acoustic\_neuroma

0.000 0.000 0.000 0.000 0.000 0.000 0.353 0.009 bells\_palsy

0.897 0.107 0.743 0.897 0.813 0.746 0.941 0.843 cochlear\_age

0.909 0.020 0.833 0.909 0.870 0.856 0.939 0.734 cochlear\_age\_and\_noise

0.000 0.000 0.000 0.000 0.000 0.000 ? ? cochlear\_age\_plus\_poss\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.375 0.009 cochlear\_noise\_and\_heredity

0.700 0.039 0.636 0.700 0.667 0.633 0.924 0.651 cochlear\_poss\_noise

0.750 0.124 0.621 0.750 0.679 0.587 0.832 0.485 cochlear\_unknown

0.000 0.000 0.000 0.000 0.000 0.000 0.326 0.009 conductive\_discontinuity

0.000 0.000 0.000 0.000 0.000 0.000 0.971 0.361 conductive\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.371 0.009 mixed\_cochlear\_age\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.552 0.025 mixed\_cochlear\_age\_otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 0.438 0.009 mixed\_cochlear\_age\_s\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.442 0.009 mixed\_cochlear\_unk\_discontinuity

1.000 0.028 0.625 1.000 0.769 0.780 1.000 1.000 mixed\_cochlear\_unk\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.388 0.009 mixed\_cochlear\_unk\_ser\_om

0.000 0.000 0.000 0.000 0.000 0.000 ? ? mixed\_poss\_central\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.326 0.009 mixed\_poss\_noise\_om

0.727 0.029 0.727 0.727 0.727 0.698 0.881 0.513 normal\_ear

0.000 0.018 0.000 0.000 0.000 -0.018 0.552 0.024 otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 ? ? poss\_central

0.000 0.009 0.000 0.000 0.000 -0.013 0.903 0.108 possible\_brainstem\_disorder

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 possible\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.464 0.009 retrocochlear\_unknown

Weighted Avg. 0.690 0.064 0.594 0.690 0.637 0.593 0.852 0.591

=== Confusion Matrix ===

a b c d e f g h i j k l m n o p q r s t u v w x <-- classified as

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | a = acoustic\_neuroma

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | b = bells\_palsy

0 0 26 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | c = cochlear\_age

0 0 0 10 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | d = cochlear\_age\_and\_noise

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | e = cochlear\_age\_plus\_poss\_menieres

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | f = cochlear\_noise\_and\_heredity

0 0 0 0 0 0 7 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | g = cochlear\_poss\_noise

0 0 4 0 0 0 0 18 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 | h = cochlear\_unknown

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | i = conductive\_discontinuity

0 0 2 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | j = conductive\_fixation

0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | k = mixed\_cochlear\_age\_fixation

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 | l = mixed\_cochlear\_age\_otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 | m = mixed\_cochlear\_age\_s\_om

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | n = mixed\_cochlear\_unk\_discontinuity

0 0 0 0 0 0 0 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 0 0 | o = mixed\_cochlear\_unk\_fixation

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | p = mixed\_cochlear\_unk\_ser\_om

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | q = mixed\_poss\_central\_om

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | r = mixed\_poss\_noise\_om

0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 8 0 0 0 0 0 | s = normal\_ear

0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | t = otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | u = poss\_central

0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | v = possible\_brainstem\_disorder

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 0 | w = possible\_menieres

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | x = retrocochlear\_unknown

=== Run information ===

Scheme: weka.classifiers.meta.FilteredClassifier -F "weka.filters.supervised.attribute.Discretize -R first-last -precision 6" -W weka.classifiers.rules.JRip -- -F 3 -N 2.0 -O 2 -S 1

Relation: audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 113

Attributes: 70

age\_gt\_60

air

airBoneGap

ar\_c

ar\_u

bone

boneAbnormal

bser

history\_buzzing

history\_dizziness

history\_fluctuating

history\_fullness

history\_heredity

history\_nausea

history\_noise

history\_recruitment

history\_ringing

history\_roaring

history\_vomiting

late\_wave\_poor

m\_at\_2k

m\_cond\_lt\_1k

m\_gt\_1k

m\_m\_gt\_2k

m\_m\_sn

m\_m\_sn\_gt\_1k

m\_m\_sn\_gt\_2k

m\_m\_sn\_gt\_500

m\_p\_sn\_gt\_2k

m\_s\_gt\_500

m\_s\_sn

m\_s\_sn\_gt\_1k

m\_s\_sn\_gt\_2k

m\_s\_sn\_gt\_3k

m\_s\_sn\_gt\_4k

m\_sn\_2\_3k

m\_sn\_gt\_1k

m\_sn\_gt\_2k

m\_sn\_gt\_3k

m\_sn\_gt\_4k

m\_sn\_gt\_500

m\_sn\_gt\_6k

m\_sn\_lt\_1k

m\_sn\_lt\_2k

m\_sn\_lt\_3k

middle\_wave\_poor

mod\_gt\_4k

mod\_mixed

mod\_s\_mixed

mod\_s\_sn\_gt\_500

mod\_sn

mod\_sn\_gt\_1k

mod\_sn\_gt\_2k

mod\_sn\_gt\_3k

mod\_sn\_gt\_4k

mod\_sn\_gt\_500

notch\_4k

notch\_at\_4k

o\_ar\_c

o\_ar\_u

s\_sn\_gt\_1k

s\_sn\_gt\_2k

s\_sn\_gt\_4k

speech

static\_normal

tymp

viith\_nerve\_signs

wave\_V\_delayed

waveform\_ItoV\_prolonged

class

Test mode: 20-fold cross-validation

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

FilteredClassifier using weka.classifiers.rules.JRip -F 3 -N 2.0 -O 2 -S 1 on data filtered through weka.filters.supervised.attribute.Discretize -R first-last -precision 6

Filtered Header

@relation audiology-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute age\_gt\_60 {f,t}

@attribute air {mild,moderate,normal,profound,severe}

@attribute airBoneGap {f,t}

@attribute ar\_c {absent,elevated,normal}

@attribute ar\_u {absent,elevated,normal}

@attribute bone {mild,moderate,normal,unmeasured}

@attribute boneAbnormal {f,t}

@attribute bser {degraded,normal}

@attribute history\_buzzing {f,t}

@attribute history\_dizziness {f,t}

@attribute history\_fluctuating {f,t}

@attribute history\_fullness {f,t}

@attribute history\_heredity {f,t}

@attribute history\_nausea {f,t}

@attribute history\_noise {f,t}

@attribute history\_recruitment {f,t}

@attribute history\_ringing {f,t}

@attribute history\_roaring {f,t}

@attribute history\_vomiting {f,t}

@attribute late\_wave\_poor {f,t}

@attribute m\_at\_2k {f,t}

@attribute m\_cond\_lt\_1k {f,t}

@attribute m\_gt\_1k {f,t}

@attribute m\_m\_gt\_2k {f,t}

@attribute m\_m\_sn {f,t}

@attribute m\_m\_sn\_gt\_1k {f,t}

@attribute m\_m\_sn\_gt\_2k {f,t}

@attribute m\_m\_sn\_gt\_500 {f,t}

@attribute m\_p\_sn\_gt\_2k {f,t}

@attribute m\_s\_gt\_500 {f,t}

@attribute m\_s\_sn {f,t}

@attribute m\_s\_sn\_gt\_1k {f,t}

@attribute m\_s\_sn\_gt\_2k {f,t}

@attribute m\_s\_sn\_gt\_3k {f,t}

@attribute m\_s\_sn\_gt\_4k {f,t}

@attribute m\_sn\_2\_3k {f,t}

@attribute m\_sn\_gt\_1k {f,t}

@attribute m\_sn\_gt\_2k {f,t}

@attribute m\_sn\_gt\_3k {f,t}

@attribute m\_sn\_gt\_4k {f,t}

@attribute m\_sn\_gt\_500 {f,t}

@attribute m\_sn\_gt\_6k {f,t}

@attribute m\_sn\_lt\_1k {f,t}

@attribute m\_sn\_lt\_2k {f,t}

@attribute m\_sn\_lt\_3k {f,t}

@attribute middle\_wave\_poor {f,t}

@attribute mod\_gt\_4k {f,t}

@attribute mod\_mixed {f,t}

@attribute mod\_s\_mixed {f,t}

@attribute mod\_s\_sn\_gt\_500 {f,t}

@attribute mod\_sn {f,t}

@attribute mod\_sn\_gt\_1k {f,t}

@attribute mod\_sn\_gt\_2k {f,t}

@attribute mod\_sn\_gt\_3k {f,t}

@attribute mod\_sn\_gt\_4k {f,t}

@attribute mod\_sn\_gt\_500 {f,t}

@attribute notch\_4k {f,t}

@attribute notch\_at\_4k {f,t}

@attribute o\_ar\_c {absent,elevated,normal}

@attribute o\_ar\_u {absent,elevated,normal}

@attribute s\_sn\_gt\_1k {f,t}

@attribute s\_sn\_gt\_2k {f,t}

@attribute s\_sn\_gt\_4k {f,t}

@attribute speech {good,normal,poor,unmeasured,very\_good,very\_poor}

@attribute static\_normal {f,t}

@attribute tymp {a,ad,as,b,c}

@attribute viith\_nerve\_signs {f,t}

@attribute wave\_V\_delayed {f,t}

@attribute waveform\_ItoV\_prolonged {f,t}

@attribute class {acoustic\_neuroma,bells\_palsy,cochlear\_age,cochlear\_age\_and\_noise,cochlear\_age\_plus\_poss\_menieres,cochlear\_noise\_and\_heredity,cochlear\_poss\_noise,cochlear\_unknown,conductive\_discontinuity,conductive\_fixation,mixed\_cochlear\_age\_fixation,mixed\_cochlear\_age\_otitis\_media,mixed\_cochlear\_age\_s\_om,mixed\_cochlear\_unk\_discontinuity,mixed\_cochlear\_unk\_fixation,mixed\_cochlear\_unk\_ser\_om,mixed\_poss\_central\_om,mixed\_poss\_noise\_om,normal\_ear,otitis\_media,poss\_central,possible\_brainstem\_disorder,possible\_menieres,retrocochlear\_unknown}

@data

Classifier Model

JRIP rules:

===========

(tymp = as) and (bone = normal) => class=conductive\_fixation (3.0/0.0)

(history\_fluctuating = t) => class=possible\_menieres (4.0/0.0)

(tymp = as) and (age\_gt\_60 = f) => class=mixed\_cochlear\_unk\_fixation (5.0/0.0)

(notch\_at\_4k = t) => class=cochlear\_poss\_noise (9.0/2.0)

(history\_noise = t) and (age\_gt\_60 = t) => class=cochlear\_age\_and\_noise (12.0/2.0)

(bone = normal) => class=normal\_ear (13.0/5.0)

(age\_gt\_60 = f) => class=cochlear\_unknown (38.0/15.0)

=> class=cochlear\_age (29.0/3.0)

Number of Rules : 8

Time taken to build model: 0.02 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 80 70.7965 %

Incorrectly Classified Instances 33 29.2035 %

Kappa statistic 0.6492

Mean absolute error 0.036

Root mean squared error 0.1434

Relative absolute error 49.172 %

Root relative squared error 75.4901 %

Total Number of Instances 113

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.000 0.000 0.000 0.000 0.000 0.000 0.335 0.009 acoustic\_neuroma

0.000 0.000 0.000 0.000 0.000 0.000 0.330 0.009 bells\_palsy

0.862 0.071 0.806 0.862 0.833 0.774 0.924 0.858 cochlear\_age

0.909 0.020 0.833 0.909 0.870 0.856 0.936 0.706 cochlear\_age\_and\_noise

0.000 0.000 0.000 0.000 0.000 0.000 ? ? cochlear\_age\_plus\_poss\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.335 0.009 cochlear\_noise\_and\_heredity

0.700 0.019 0.778 0.700 0.737 0.714 0.934 0.681 cochlear\_poss\_noise

0.875 0.146 0.618 0.875 0.724 0.650 0.875 0.556 cochlear\_unknown

0.000 0.000 0.000 0.000 0.000 0.000 0.330 0.009 conductive\_discontinuity

0.000 0.000 0.000 0.000 0.000 0.000 0.991 0.589 conductive\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.446 0.009 mixed\_cochlear\_age\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.649 0.040 mixed\_cochlear\_age\_otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 0.446 0.009 mixed\_cochlear\_age\_s\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.424 0.009 mixed\_cochlear\_unk\_discontinuity

1.000 0.028 0.625 1.000 0.769 0.780 0.996 0.933 mixed\_cochlear\_unk\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.362 0.009 mixed\_cochlear\_unk\_ser\_om

0.000 0.000 0.000 0.000 0.000 0.000 ? ? mixed\_poss\_central\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.348 0.009 mixed\_poss\_noise\_om

0.727 0.049 0.615 0.727 0.667 0.630 0.887 0.424 normal\_ear

0.000 0.018 0.000 0.000 0.000 -0.018 0.360 0.018 otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 ? ? poss\_central

0.000 0.000 0.000 0.000 0.000 0.000 0.802 0.062 possible\_brainstem\_disorder

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 possible\_menieres

0.000 0.000 0.000 0.000 0.000 0.000 0.420 0.009 retrocochlear\_unknown

Weighted Avg. 0.708 0.059 0.611 0.708 0.652 0.614 0.854 0.604

=== Confusion Matrix ===

a b c d e f g h i j k l m n o p q r s t u v w x <-- classified as

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | a = acoustic\_neuroma

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | b = bells\_palsy

0 0 25 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0 | c = cochlear\_age

0 0 0 10 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | d = cochlear\_age\_and\_noise

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | e = cochlear\_age\_plus\_poss\_menieres

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | f = cochlear\_noise\_and\_heredity

0 0 0 0 0 0 7 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | g = cochlear\_poss\_noise

0 0 2 0 0 0 0 21 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | h = cochlear\_unknown

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | i = conductive\_discontinuity

0 0 2 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | j = conductive\_fixation

0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 | k = mixed\_cochlear\_age\_fixation

0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 | l = mixed\_cochlear\_age\_otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 | m = mixed\_cochlear\_age\_s\_om

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | n = mixed\_cochlear\_unk\_discontinuity

0 0 0 0 0 0 0 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 0 0 | o = mixed\_cochlear\_unk\_fixation

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | p = mixed\_cochlear\_unk\_ser\_om

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | q = mixed\_poss\_central\_om

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | r = mixed\_poss\_noise\_om

0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 8 0 0 0 0 0 | s = normal\_ear

0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | t = otitis\_media

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | u = poss\_central

0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | v = possible\_brainstem\_disorder

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 0 | w = possible\_menieres

0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | x = retrocochlear\_unknown