=== 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: autos-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 103

Attributes: 26

normalized-losses

make

fuel-type

aspiration

num-of-doors

body-style

drive-wheels

engine-location

wheel-base

length

width

height

curb-weight

engine-type

num-of-cylinders

engine-size

fuel-system

bore

stroke

compression-ratio

horsepower

peak-rpm

city-mpg

highway-mpg

price

symboling

Test mode: 10-fold cross-validation(seed10)

=== 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 autos-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute normalized-losses {'\'(-inf-116.5]\'','\'(116.5-inf)\''}

@attribute make {alfa-romero,audi,bmw,chevrolet,dodge,honda,isuzu,jaguar,mazda,mercedes-benz,mercury,mitsubishi,nissan,peugot,plymouth,porsche,renault,saab,subaru,toyota,volkswagen,volvo}

@attribute fuel-type {diesel,gas}

@attribute aspiration {std,turbo}

@attribute num-of-doors {four,two}

@attribute body-style {hardtop,wagon,sedan,hatchback,convertible}

@attribute drive-wheels {4wd,fwd,rwd}

@attribute engine-location {front,rear}

@attribute wheel-base {'\'(-inf-95.5]\'','\'(95.5-101.6]\'','\'(101.6-inf)\''}

@attribute length {'\'(-inf-173.3]\'','\'(173.3-inf)\''}

@attribute width {'\'(-inf-64.3]\'','\'(64.3-inf)\''}

@attribute height {'\'(-inf-52.45]\'','\'(52.45-56.15]\'','\'(56.15-56.25]\'','\'(56.25-inf)\''}

@attribute curb-weight {'\'(-inf-1846.5]\'','\'(1846.5-2212.5]\'','\'(2212.5-inf)\''}

@attribute engine-type {dohc,dohcv,l,ohc,ohcf,ohcv,rotor}

@attribute num-of-cylinders {eight,five,four,six,three,twelve,two}

@attribute engine-size {'\'All\''}

@attribute fuel-system {1bbl,2bbl,4bbl,idi,mfi,mpfi,spdi,spfi}

@attribute bore {'\'(-inf-3.255]\'','\'(3.255-inf)\''}

@attribute stroke {'\'All\''}

@attribute compression-ratio {'\'All\''}

@attribute horsepower {'\'All\''}

@attribute peak-rpm {'\'All\''}

@attribute city-mpg {'\'All\''}

@attribute highway-mpg {'\'(-inf-33.5]\'','\'(33.5-inf)\''}

@attribute price {'\'(-inf-8883]\'','\'(8883-inf)\''}

@attribute symboling {-3,-2,-1,0,1,2,3}

@data

Classifier Model

JRIP rules:

===========

(height = '(56.15-56.25]') => symboling=-2 (2.0/0.0)

(wheel-base = '(101.6-inf)') and (normalized-losses = '(-inf-116.5]') => symboling=-1 (12.0/1.0)

(height = '(-inf-52.45]') and (price = '(8883-inf)') and (length = '(-inf-173.3]') => symboling=3 (13.0/2.0)

(make = saab) and (normalized-losses = '(116.5-inf)') => symboling=3 (2.0/0.0)

(curb-weight = '(-inf-1846.5]') => symboling=2 (3.0/0.0)

(fuel-system = mpfi) and (wheel-base = '(95.5-101.6]') => symboling=2 (14.0/5.0)

(wheel-base = '(-inf-95.5]') => symboling=1 (20.0/3.0)

(make = audi) => symboling=1 (2.0/0.0)

=> symboling=0 (35.0/8.0)

Number of Rules : 9

Time taken to build model: 0.01 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 56 54.3689 %

Incorrectly Classified Instances 47 45.6311 %

Kappa statistic 0.3987

Mean absolute error 0.1528

Root mean squared error 0.3163

Relative absolute error 68.44 %

Root relative squared error 94.9252 %

Total Number of Instances 103

=== 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 ? ? -3

0.000 0.000 0.000 0.000 0.000 0.000 0.943 0.183 -2

0.727 0.033 0.727 0.727 0.727 0.695 0.918 0.559 -1

0.727 0.271 0.558 0.727 0.632 0.431 0.760 0.627 0

0.519 0.132 0.583 0.519 0.549 0.403 0.709 0.457 1

0.125 0.092 0.200 0.125 0.154 0.040 0.678 0.261 2

0.571 0.079 0.533 0.571 0.552 0.479 0.781 0.419 3

Weighted Avg. 0.544 0.150 0.513 0.544 0.523 0.389 0.757 0.482

=== Confusion Matrix ===

a b c d e f g <-- classified as

0 0 0 0 0 0 0 | a = -3

0 0 2 0 0 0 0 | b = -2

0 0 8 3 0 0 0 | c = -1

0 0 1 24 4 3 1 | d = 0

0 0 0 8 14 2 3 | e = 1

0 0 0 6 5 2 3 | f = 2

0 0 0 2 1 3 8 | g = 3

=== 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(seed10)

=== 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 0.6273

Mean absolute error 0.0359

Root mean squared error 0.1462

Relative absolute error 49.1425 %

Root relative squared error 77.0539 %

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 0.366 0.009 bells\_palsy

0.897 0.095 0.765 0.897 0.825 0.763 0.944 0.866 cochlear\_age

0.909 0.020 0.833 0.909 0.870 0.856 0.937 0.691 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 0.371 0.009 cochlear\_noise\_and\_heredity

0.700 0.039 0.636 0.700 0.667 0.633 0.931 0.564 cochlear\_poss\_noise

0.750 0.157 0.563 0.750 0.643 0.538 0.863 0.519 cochlear\_unknown

0.000 0.000 0.000 0.000 0.000 0.000 0.366 0.009 conductive\_discontinuity

0.667 0.009 0.667 0.667 0.667 0.658 0.988 0.569 conductive\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.424 0.009 mixed\_cochlear\_age\_fixation

0.000 0.000 0.000 0.000 0.000 0.000 0.836 0.068 mixed\_cochlear\_age\_otitis\_media

0.000 0.000 0.000 0.000 0.000 0.000 0.433 0.009 mixed\_cochlear\_age\_s\_om

0.000 0.000 0.000 0.000 0.000 0.000 0.429 0.009 mixed\_cochlear\_unk\_discontinuity

1.000 0.019 0.714 1.000 0.833 0.837 0.989 0.810 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 0.353 0.009 mixed\_poss\_noise\_om

0.545 0.029 0.667 0.545 0.600 0.565 0.882 0.414 normal\_ear

0.000 0.000 0.000 0.000 0.000 0.000 0.342 0.018 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 0.797 0.058 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 0.429 0.009 retrocochlear\_unknown

Weighted Avg. 0.690 0.067 0.603 0.690 0.640 0.594 0.860 0.579

=== 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 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 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 3 0 0 0 1 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 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | i = conductive\_discontinuity

0 0 1 0 0 0 0 0 0 2 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 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 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 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 3 0 0 0 0 0 0 0 0 0 0 6 0 0 0 0 0 | s = normal\_ear

0 0 0 0 0 0 0 1 0 1 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: anneal.ORIG-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 449

Attributes: 39

family

product-type

steel

carbon

hardness

temper\_rolling

condition

formability

strength

non-ageing

surface-finish

surface-quality

enamelability

bc

bf

bt

bw/me

bl

m

chrom

phos

cbond

marvi

exptl

ferro

corr

blue/bright/varn/clean

lustre

jurofm

s

p

shape

thick

width

len

oil

bore

packing

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 anneal.ORIG-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute family {GB,GK,GS,TN,ZA,ZF,ZH,ZM,ZS}

@attribute product-type {C,H,G}

@attribute steel {R,A,U,K,M,S,W,V}

@attribute carbon {'\'All\''}

@attribute hardness {'\'(-inf-22.5]\'','\'(22.5-75]\'','\'(75-inf)\''}

@attribute temper\_rolling {T}

@attribute condition {S,A,X}

@attribute formability {1,2,3,4,5}

@attribute strength {'\'(-inf-375]\'','\'(375-inf)\''}

@attribute non-ageing {N}

@attribute surface-finish {P,M}

@attribute surface-quality {D,E,F,G}

@attribute enamelability {1,2,3,4,5}

@attribute bc {Y}

@attribute bf {Y}

@attribute bt {Y}

@attribute bw/me {B,M}

@attribute bl {Y}

@attribute m {Y}

@attribute chrom {C}

@attribute phos {P}

@attribute cbond {Y}

@attribute marvi {Y}

@attribute exptl {Y}

@attribute ferro {Y}

@attribute corr {Y}

@attribute blue/bright/varn/clean {B,R,V,C}

@attribute lustre {Y}

@attribute jurofm {Y}

@attribute s {Y}

@attribute p {Y}

@attribute shape {COIL,SHEET}

@attribute thick {'\'(-inf-0.7995]\'','\'(0.7995-2.1]\'','\'(2.1-3.2005]\'','\'(3.2005-inf)\''}

@attribute width {'\'(-inf-1235]\'','\'(1235-1410.05]\'','\'(1410.05-inf)\''}

@attribute len {'\'(-inf-0.5]\'','\'(0.5-inf)\''}

@attribute oil {Y,N}

@attribute bore {0,500,600,760}

@attribute packing {1,2,3}

@attribute class {1,2,3,4,5,U}

@data

Classifier Model

JRIP rules:

===========

(steel = S) and (strength = '(375-inf)') => class=1 (3.0/0.0)

(hardness = '(75-inf)') => class=U (20.0/1.0)

(family = TN) => class=5 (34.0/0.0)

(thick = '(0.7995-2.1]') and (shape = SHEET) and (steel = R) => class=2 (50.0/18.0)

(strength = '(375-inf)') and (shape = SHEET) => class=2 (8.0/0.0)

(thick = '(0.7995-2.1]') and (enamelability = 2) => class=2 (3.0/0.0)

=> class=3 (331.0/8.0)

Number of Rules : 7

Time taken to build model: 0.04 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 416 92.6503 %

Incorrectly Classified Instances 33 7.3497 %

Kappa statistic 0.8218

Mean absolute error 0.0358

Root mean squared error 0.1423

Relative absolute error 26.3885 %

Root relative squared error 55.0937 %

Total Number of Instances 449

=== Detailed Accuracy By Class ===

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

0.250 0.000 1.000 0.250 0.400 0.498 0.755 0.277 1

0.837 0.050 0.672 0.837 0.745 0.716 0.898 0.595 2

0.939 0.112 0.964 0.939 0.951 0.804 0.922 0.963 3

0.000 0.000 0.000 0.000 0.000 0.000 ? ? 4

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 5

0.950 0.002 0.950 0.950 0.950 0.948 0.955 0.866 U

Weighted Avg. 0.927 0.091 0.935 0.927 0.927 0.813 0.926 0.915

=== Confusion Matrix ===

a b c d e f <-- classified as

1 0 3 0 0 0 | a = 1

0 41 8 0 0 0 | b = 2

0 20 321 0 0 1 | c = 3

0 0 0 0 0 0 | d = 4

0 0 0 0 34 0 | e = 5

0 0 1 0 0 19 | f = U

=== 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: anneal-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 449

Attributes: 39

family

product-type

steel

carbon

hardness

temper\_rolling

condition

formability

strength

non-ageing

surface-finish

surface-quality

enamelability

bc

bf

bt

bw/me

bl

m

chrom

phos

cbond

marvi

exptl

ferro

corr

blue/bright/varn/clean

lustre

jurofm

s

p

shape

thick

width

len

oil

bore

packing

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 anneal-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute family {'?',GB,GK,GS,TN,ZA,ZF,ZH,ZM,ZS}

@attribute product-type {C,H,G}

@attribute steel {'?',R,A,U,K,M,S,W,V}

@attribute carbon {'\'All\''}

@attribute hardness {'\'(-inf-22.5]\'','\'(22.5-75]\'','\'(75-inf)\''}

@attribute temper\_rolling {'?',T}

@attribute condition {'?',S,A,X}

@attribute formability {'?',1,2,3,4,5}

@attribute strength {'\'(-inf-375]\'','\'(375-inf)\''}

@attribute non-ageing {'?',N}

@attribute surface-finish {'?',P,M}

@attribute surface-quality {'?',D,E,F,G}

@attribute enamelability {'?',1,2,3,4,5}

@attribute bc {'?',Y}

@attribute bf {'?',Y}

@attribute bt {'?',Y}

@attribute bw/me {'?',B,M}

@attribute bl {'?',Y}

@attribute m {'?',Y}

@attribute chrom {'?',C}

@attribute phos {'?',P}

@attribute cbond {'?',Y}

@attribute marvi {'?',Y}

@attribute exptl {'?',Y}

@attribute ferro {'?',Y}

@attribute corr {'?',Y}

@attribute blue/bright/varn/clean {'?',B,R,V,C}

@attribute lustre {'?',Y}

@attribute jurofm {'?',Y}

@attribute s {'?',Y}

@attribute p {'?',Y}

@attribute shape {COIL,SHEET}

@attribute thick {'\'(-inf-0.7995]\'','\'(0.7995-2.1]\'','\'(2.1-3.2005]\'','\'(3.2005-inf)\''}

@attribute width {'\'(-inf-1235]\'','\'(1235-1410.05]\'','\'(1410.05-inf)\''}

@attribute len {'\'(-inf-0.5]\'','\'(0.5-inf)\''}

@attribute oil {'?',Y,N}

@attribute bore {0,500,600,760}

@attribute packing {'?',1,2,3}

@attribute class {1,2,3,4,5,U}

@data

Classifier Model

JRIP rules:

===========

(steel = S) and (strength = '(375-inf)') => class=1 (3.0/0.0)

(hardness = '(75-inf)') => class=U (20.0/1.0)

(family = TN) => class=5 (34.0/0.0)

(surface-quality = ?) and (condition = S) and (thick = '(0.7995-2.1]') => class=2 (41.0/1.0)

(strength = '(375-inf)') and (shape = SHEET) => class=2 (9.0/1.0)

=> class=3 (342.0/3.0)

Number of Rules : 6

Time taken to build model: 0.02 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 438 97.5501 %

Incorrectly Classified Instances 11 2.4499 %

Kappa statistic 0.9389

Mean absolute error 0.0122

Root mean squared error 0.0885

Relative absolute error 9.0353 %

Root relative squared error 34.268 %

Total Number of Instances 449

=== Detailed Accuracy By Class ===

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

0.500 0.000 1.000 0.500 0.667 0.706 0.780 0.523 1

0.959 0.013 0.904 0.959 0.931 0.922 0.979 0.917 2

0.982 0.047 0.985 0.982 0.984 0.933 0.973 0.984 3

0.000 0.000 0.000 0.000 0.000 0.000 ? ? 4

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 5

0.950 0.002 0.950 0.950 0.950 0.948 0.955 0.866 U

Weighted Avg. 0.976 0.037 0.976 0.976 0.975 0.935 0.973 0.969

=== Confusion Matrix ===

a b c d e f <-- classified as

2 0 2 0 0 0 | a = 1

0 47 2 0 0 0 | b = 2

0 5 336 0 0 1 | c = 3

0 0 0 0 0 0 | d = 4

0 0 0 0 34 0 | e = 5

0 0 1 0 0 19 | f = U

=== 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: abalone-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1

Instances: 2089

Attributes: 9

Sex

Length

Diameter

Height

Whole weight

Shucked weight

Viscera weight

Shell weight

Class\_Rings

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 abalone-weka.filters.supervised.instance.StratifiedRemoveFolds-S0-N2-F1-weka.filters.supervised.attribute.Discretize-Rfirst-last-precision6

@attribute Sex {M,F,I}

@attribute Length {'\'(-inf-0.2575]\'','\'(0.2575-0.3075]\'','\'(0.3075-0.4425]\'','\'(0.4425-0.5375]\'','\'(0.5375-inf)\''}

@attribute Diameter {'\'(-inf-0.1675]\'','\'(0.1675-0.2225]\'','\'(0.2225-0.3375]\'','\'(0.3375-0.4075]\'','\'(0.4075-inf)\''}

@attribute Height {'\'(-inf-0.0625]\'','\'(0.0625-0.0775]\'','\'(0.0775-0.1025]\'','\'(0.1025-0.1225]\'','\'(0.1225-0.1525]\'','\'(0.1525-inf)\''}

@attribute 'Whole weight' {'\'(-inf-0.07325]\'','\'(0.07325-0.162]\'','\'(0.162-0.46675]\'','\'(0.46675-0.95225]\'','\'(0.95225-inf)\''}

@attribute 'Shucked weight' {'\'(-inf-0.03025]\'','\'(0.03025-0.05175]\'','\'(0.05175-0.18125]\'','\'(0.18125-0.424]\'','\'(0.424-inf)\''}

@attribute 'Viscera weight' {'\'(-inf-0.01025]\'','\'(0.01025-0.029]\'','\'(0.029-0.07275]\'','\'(0.07275-0.11725]\'','\'(0.11725-0.22075]\'','\'(0.22075-inf)\''}

@attribute 'Shell weight' {'\'(-inf-0.0275]\'','\'(0.0275-0.05825]\'','\'(0.05825-0.11975]\'','\'(0.11975-0.16775]\'','\'(0.16775-0.32375]\'','\'(0.32375-inf)\''}

@attribute Class\_Rings {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,29}

@data

Classifier Model

JRIP rules:

===========

(Length = '(-inf-0.2575]') and (Sex = M) => Class\_Rings=4 (9.0/4.0)

(Diameter = '(0.1675-0.2225]') and (Length = '(0.2575-0.3075]') and (Height = '(-inf-0.0625]') => Class\_Rings=5 (6.0/1.0)

(Viscera weight = '(0.01025-0.029]') and (Shell weight = '(-inf-0.0275]') and (Height = '(0.0625-0.0775]') => Class\_Rings=5 (7.0/2.0)

(Viscera weight = '(0.01025-0.029]') and (Length = '(0.2575-0.3075]') and (Diameter = '(0.1675-0.2225]') and (Height = '(0.0775-0.1025]') => Class\_Rings=5 (6.0/2.0)

(Length = '(-inf-0.2575]') and (Height = '(0.0775-0.1025]') => Class\_Rings=5 (3.0/1.0)

(Diameter = '(0.2225-0.3375]') and (Sex = I) and (Shell weight = '(0.0275-0.05825]') and (Length = '(0.3075-0.4425]') => Class\_Rings=6 (45.0/21.0)

(Shell weight = '(0.05825-0.11975]') and (Sex = I) and (Height = '(0.0625-0.0775]') => Class\_Rings=6 (6.0/2.0)

(Diameter = '(0.2225-0.3375]') and (Sex = I) and (Viscera weight = '(0.07275-0.11725]') and (Shucked weight = '(0.18125-0.424]') => Class\_Rings=7 (16.0/7.0)

=> Class\_Rings=9 (1991.0/1647.0)

Number of Rules : 9

Time taken to build model: 0.11 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 372 17.8076 %

Incorrectly Classified Instances 1717 82.1924 %

Kappa statistic 0.0206

Mean absolute error 0.0631

Root mean squared error 0.1783

Relative absolute error 98.5888 %

Root relative squared error 99.7039 %

Total Number of Instances 2089

=== 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 0.118 0.000 1

0.000 0.000 0.000 0.000 0.000 0.000 ? ? 2

0.000 0.000 0.000 0.000 0.000 -0.001 0.431 0.003 3

0.000 0.001 0.000 0.000 0.000 -0.004 0.619 0.072 4

0.190 0.009 0.379 0.190 0.253 0.254 0.679 0.133 5

0.101 0.009 0.419 0.101 0.163 0.182 0.588 0.146 6

0.010 0.003 0.286 0.010 0.020 0.038 0.546 0.131 7

0.021 0.009 0.273 0.021 0.039 0.041 0.518 0.148 8

0.986 0.947 0.171 0.986 0.291 0.068 0.524 0.173 9

0.000 0.001 0.000 0.000 0.000 -0.013 0.528 0.160 10

0.000 0.000 0.000 0.000 0.000 0.000 0.534 0.126 11

0.000 0.001 0.000 0.000 0.000 -0.008 0.530 0.067 12

0.000 0.000 0.000 0.000 0.000 0.000 0.533 0.057 13

0.000 0.000 0.000 0.000 0.000 0.000 0.522 0.031 14

0.000 0.000 0.000 0.000 0.000 0.000 0.496 0.024 15

0.000 0.000 0.000 0.000 0.000 0.000 0.499 0.016 16

0.000 0.000 0.000 0.000 0.000 0.000 0.514 0.014 17

0.000 0.000 0.000 0.000 0.000 0.000 0.508 0.010 18

0.000 0.000 0.000 0.000 0.000 0.000 0.456 0.007 19

0.000 0.000 0.000 0.000 0.000 0.000 0.449 0.006 20

0.000 0.000 0.000 0.000 0.000 0.000 0.385 0.003 21

0.000 0.000 0.000 0.000 0.000 0.000 0.193 0.001 22

0.000 0.000 0.000 0.000 0.000 0.000 0.285 0.002 23

0.000 0.000 0.000 0.000 0.000 0.000 0.070 0.000 24

0.000 0.000 0.000 0.000 0.000 0.000 ? ? 25

0.000 0.000 0.000 0.000 0.000 0.000 0.072 0.000 26

0.000 0.000 0.000 0.000 0.000 0.000 0.070 0.000 27

0.000 0.000 0.000 0.000 0.000 0.000 0.072 0.000 29

Weighted Avg. 0.178 0.159 0.128 0.178 0.072 0.036 0.532 0.123

=== 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 y z aa ab <-- classified as

0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | a = 1

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 | b = 2

0 0 0 0 0 0 0 0 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | c = 3

0 0 1 0 6 0 0 0 22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | d = 4

0 0 0 3 11 4 0 0 40 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | e = 5

0 0 0 0 8 13 3 0 104 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | f = 6

0 0 0 0 2 9 2 10 171 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | g = 7

0 0 0 0 1 4 2 6 271 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | h = 8

0 0 0 0 1 1 0 3 340 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | i = 9

0 0 0 0 0 0 0 1 316 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | j = 10

0 0 0 0 0 0 0 1 241 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | k = 11

0 0 0 0 0 0 0 0 133 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | l = 12

0 0 0 0 0 0 0 0 101 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | m = 13

0 0 0 0 0 0 0 0 63 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | n = 14

0 0 0 0 0 0 0 1 51 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | o = 15

0 0 0 0 0 0 0 0 33 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | p = 16

0 0 0 0 0 0 0 0 29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | q = 17

0 0 0 0 0 0 0 0 21 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | r = 18

0 0 0 0 0 0 0 0 16 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | s = 19

0 0 0 0 0 0 0 0 13 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | t = 20

0 0 0 0 0 0 0 0 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | u = 21

0 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | v = 22

0 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | w = 23

0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | x = 24

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 | y = 25

0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | z = 26

0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | aa = 27

0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | ab = 29