Dalton Brooks **Pages** - **ZeroR**: 1-2 **Bayes**: 2 – 3 **Function**: 3-4 **Meta**: 4-18 **Rule**: 18 – 19 **Tree**: 19-22

**Overview of Dataset**

Data is using attributes to identify the type of glass. Classes include Building Windows Float Processed, Building Windows non float processed, vehicle windows float processed, vehicle windows non float processed, containers, tableware, headlamps.

The attributes are minerals included inside the glass and Refractive index(What blend of light passes through)

Scheme: weka.classifiers.rules.ZeroR

Relation: Glass

Instances: 214

Attributes: 10

RI – Refractive index

Na – Sodium

Mg - Magnesium

Al - Aluminum

Si – Silicon

K - Potassium

Ca - Calcium

Ba - Barium

Fe - Iron

Type

**Summary of Results**

ZeroR

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

ZeroR predicts class value: build wind non-float

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 76 35.514 %

Incorrectly Classified Instances 138 64.486 %

Kappa statistic 0

Mean absolute error 0.2118

Root mean squared error 0.3245

Relative absolute error 100 %

Root relative squared error 100 %

Total Number of Instances 214

=== Detailed Accuracy By Class ===

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

0.000 0.000 ? 0.000 ? ? 0.492 0.324 build wind float

1.000 1.000 0.355 1.000 0.524 ? 0.473 0.341 build wind non-float

0.000 0.000 ? 0.000 ? ? 0.432 0.071 vehic wind float

? 0.000 ? ? ? ? ? ? vehic wind non-float

0.000 0.000 ? 0.000 ? ? 0.417 0.053 containers

0.000 0.000 ? 0.000 ? ? 0.441 0.039 tableware

0.000 0.000 ? 0.000 ? ? 0.475 0.129 headlamps

Weighted Avg. 0.355 0.355 ? 0.355 ? ? 0.472 0.255

=== Confusion Matrix ===

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

0 70 0 0 0 0 0 | a = build wind float

0 76 0 0 0 0 0 | b = build wind non-float

0 17 0 0 0 0 0 | c = vehic wind float

0 0 0 0 0 0 0 | d = vehic wind non-float

0 13 0 0 0 0 0 | e = containers

0 9 0 0 0 0 0 | f = tableware

0 29 0 0 0 0 0 | g = headlamps

Bayes

Scheme: weka.classifiers.bayes.NaiveBayesMultinomial

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

The independent probability of a class

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build wind float 0.32

build wind non-float 0.35

vehic wind float 0.08

vehic wind non-float 0

containers 0.06

tableware 0.05

headlamps 0.14

The probability of a word given the class

-----------------------------------------

build wind float build wind non-float vehic wind float vehic wind non-float containers tableware headlamps

RI 0.02 0.02 0.02 0.11 0.02 0.02 0.02

Na 0.13 0.13 0.13 0.11 0.13 0.14 0.14

Mg 0.04 0.03 0.04 0.11 0.01 0.01 0.01

Al 0.01 0.01 0.01 0.11 0.02 0.01 0.02

Si 0.72 0.72 0.71 0.11 0.71 0.72 0.72

K 0 0.01 0 0.11 0.02 0 0

Ca 0.09 0.09 0.09 0.11 0.1 0.09 0.08

Ba 0 0 0 0.11 0 0 0.01

Fe 0 0 0 0.11 0 0 0

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 112 52.3364 %

Incorrectly Classified Instances 102 47.6636 %

Kappa statistic 0.322

Mean absolute error 0.167

Root mean squared error 0.2915

Relative absolute error 78.8422 %

Root relative squared error 89.8061 %

Total Number of Instances 214

=== Detailed Accuracy By Class ===

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

0.657 0.264 0.548 0.657 0.597 0.378 0.787 0.598 build wind float

0.526 0.341 0.460 0.526 0.491 0.181 0.633 0.436 build wind non-float

0.000 0.000 ? 0.000 ? ? 0.568 0.092 vehic wind float

? 0.000 ? ? ? ? ? ? vehic wind non-float

0.231 0.015 0.500 0.231 0.316 0.312 0.932 0.530 containers

0.000 0.010 0.000 0.000 0.000 -0.020 0.922 0.234 tableware

0.793 0.065 0.657 0.793 0.719 0.674 0.947 0.792 headlamps

Weighted Avg. 0.523 0.217 ? 0.523 ? ? 0.751 0.507

=== Confusion Matrix ===

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

46 24 0 0 0 0 0 | a = build wind float

28 40 0 0 2 2 4 | b = build wind non-float

9 8 0 0 0 0 0 | c = vehic wind float

0 0 0 0 0 0 0 | d = vehic wind non-float

0 5 0 0 3 0 5 | e = containers

0 6 0 0 0 0 3 | f = tableware

1 4 0 0 1 0 23 | g = headlamps

Function

=== Run information ===

Scheme: weka.classifiers.functions.Logistic -R 1.0E-8 -M -1 -num-decimal-places 4

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

Logistic Regression with ridge parameter of 1.0E-8

Coefficients...

Class

Variable build wind float build wind non-float vehic wind float vehic wind non-float containers tableware

===========================================================================================================================================================

RI -46030.7875 -45790.3017 -47513.4102 -10339.1857 -45731.8053 -17742.7183

Na -215.5097 -219.9798 -218.6246 -35.5832 -215.991 56.571

Mg -2.3608 -9.2984 -5.0187 16.825 -8.4554 75.0936

Al -123.6754 -124.3886 -126.2082 -37.6918 -107.4788 120.3998

Si -171.8241 -177.0562 -178.11 -12.6877 -169.2975 29.2027

K -70.3905 -75.3404 -76.9881 -5.6794 -73.2595 -348.9329

Ca 45.21 39.6415 44.4346 8.0981 43.6207 74.2154

Ba -70.4019 -77.5189 -75.1364 -46.0028 -73.8273 -334.0511

Fe 1280.3022 1282.3597 1279.2274 403.8231 1274.6903 -1452.535

Intercept 85211.8621 85361.5465 87981.1698 16953.547 84585.4682 23103.5733

Odds Ratios...

Class

Variable build wind float build wind non-float vehic wind float vehic wind non-float containers tableware

===========================================================================================================================================================

RI 0 0 0 0 0 0

Na 0 0 0 0 0 3.702369673866181E24

Mg 0.0943 0.0001 0.0066 20277603.9281 0.0002 4.09950622341485E32

Al 0 0 0 0 0 1.945187281424097E52

Si 0 0 0 0 0 4.814835754955086E12

K 0 0 0 0.0034 0 0

Ca 4.3097391577902875E19 1.64469464281863008E17 1.984708698854199E19 3288.063 8.7950184263749007E18 1.7034550420268027E32

Ba 0 0 0 0 0 0

Fe Infinity Infinity Infinity 2.38858229515231E175 Infinity 0

Time taken to build model: 0.43 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 138 64.486 %

Incorrectly Classified Instances 76 35.514 %

Kappa statistic 0.5109

Mean absolute error 0.1209

Root mean squared error 0.2745

Relative absolute error 57.0944 %

Root relative squared error 84.5747 %

Total Number of Instances 214

=== Detailed Accuracy By Class ===

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

0.643 0.201 0.608 0.643 0.625 0.435 0.820 0.635 build wind float

0.671 0.217 0.630 0.671 0.650 0.448 0.770 0.619 build wind non-float

0.118 0.025 0.286 0.118 0.167 0.140 0.793 0.288 vehic wind float

? 0.000 ? ? ? ? ? ? vehic wind non-float

0.692 0.030 0.600 0.692 0.643 0.620 0.798 0.450 containers

0.778 0.010 0.778 0.778 0.778 0.768 0.987 0.779 tableware

0.828 0.022 0.857 0.828 0.842 0.818 0.984 0.866 headlamps

Weighted Avg. 0.645 0.150 0.631 0.645 0.634 0.493 0.828 0.628

=== Confusion Matrix ===

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

45 19 5 0 1 0 0 | a = build wind float

19 51 0 0 3 2 1 | b = build wind non-float

9 6 2 0 0 0 0 | c = vehic wind float

0 0 0 0 0 0 0 | d = vehic wind non-float

0 3 0 0 9 0 1 | e = containers

0 0 0 0 0 7 2 | f = tableware

1 2 0 0 2 0 24 | g = headlamps

Meta

=== Run information ===

Scheme: weka.classifiers.meta.LogitBoost -P 100 -L -1.7976931348623157E308 -H 1.0 -Z 3.0 -O 1 -E 1 -S 1 -I 10 -W weka.classifiers.trees.DecisionStump

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

LogitBoost: Base classifiers and their weights:

Iteration 1

Class 1 (Type=build wind float)

Decision Stump

Classifications

Al <= 1.42 : 1.939267886855241

Al > 1.42 : -0.6214953271028048

Al is missing : 1.0477223427331912

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

Ca <= 8.325 : 2.2209631728045323

Ca > 8.325 : 0.5548060708263097

Ca is missing : 1.1765327695560297

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Mg <= 3.335 : -1.1666666666666652

Mg > 3.335 : -0.1183932346723056

Mg is missing : -0.4683098591549325

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

RI <= 1.517535 : -1.1666666666666625

RI > 1.517535 : -1.1666666666666614

RI is missing : -1.1666666666666596

Class 5 (Type=containers)

Decision Stump

Classifications

Ca <= 10.075 : -0.9665523156089191

Ca > 10.075 : 1.1981981981982017

Ca is missing : -0.6203170028818432

Class 6 (Type=tableware)

Decision Stump

Classifications

K <= 0.01 : 0.9166666666666666

K > 0.01 : -1.166666666666667

K is missing : -0.7794985250737484

Class 7 (Type=headlamps)

Decision Stump

Classifications

Ba <= 0.335 : -1.0123456790123468

Ba > 0.335 : 2.803664921465982

Ba is missing : -0.05079155672823214

Iteration 2

Class 1 (Type=build wind float)

Decision Stump

Classifications

Mg <= 3.415 : -1.0428930390905442

Mg > 3.415 : 0.6597276180734353

Mg is missing : 0.11530358877192783

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

RI <= 1.523895 : 0.07799844815610524

RI > 1.523895 : 2.7790411160620714

RI is missing : 0.2598268939957586

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Ca <= 8.315000000000001 : -1.0885500569580622

Ca > 8.315000000000001 : 0.36880648258516535

Ca is missing : 0.039126832361766554

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

Al <= 1.42 : -1.0381239805946951

Al > 1.42 : -1.057986612358588

Al is missing : -1.048314375072747

Class 5 (Type=containers)

Decision Stump

Classifications

Al <= 2.95 : -0.48436661638874684

Al > 2.95 : 3.0000000000000115

Al is missing : -0.25607292224728556

Class 6 (Type=tableware)

Decision Stump

Classifications

K <= 0.01 : 0.7434942064081003

K > 0.01 : -1.0496142237075872

K is missing : -0.3338866447417474

Class 7 (Type=headlamps)

Decision Stump

Classifications

Na <= 14.115 : -0.7147149157446689

Na > 14.115 : 1.318210730265049

Na is missing : 0.06602340981323483

Iteration 3

Class 1 (Type=build wind float)

Decision Stump

Classifications

Mg <= 3.865 : 0.11940150078258584

Mg > 3.865 : -1.893574027877849

Mg is missing : -0.011055479478569268

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

Fe <= 0.11499999999999999 : -0.2330667069401106

Fe > 0.11499999999999999 : 0.9219402173284361

Fe is missing : 0.06256543508262695

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Mg <= 3.335 : -1.1069729238968342

Mg > 3.335 : 0.3839249720874887

Mg is missing : 0.040165740535844235

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

Mg <= 3.415 : -1.0289956320942677

Mg > 3.415 : -1.0150165242432956

Mg is missing : -1.0221247266779412

Class 5 (Type=containers)

Decision Stump

Classifications

Mg <= 2.6950000000000003 : 1.0736534034993699

Mg > 2.6950000000000003 : -1.0453841439911278

Mg is missing : 0.09014357545796876

Class 6 (Type=tableware)

Decision Stump

Classifications

Na <= 13.785 : -1.0826264811694761

Na > 13.785 : 0.5641420288690233

Na is missing : -0.12472464114942085

Class 7 (Type=headlamps)

Decision Stump

Classifications

Mg <= 3.3449999999999998 : 0.5949872219844654

Mg > 3.3449999999999998 : -1.0687522945291552

Mg is missing : 0.06353726842448662

Iteration 4

Class 1 (Type=build wind float)

Decision Stump

Classifications

RI <= 1.517195 : -0.8605682322375121

RI > 1.517195 : 0.37787880528425866

RI is missing : 0.031073560617816433

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

Mg <= 3.755 : -0.05767568377067618

Mg > 3.755 : 1.067999163714746

Mg is missing : 0.0594659577369574

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Na <= 13.235 : -0.6447576931251879

Na > 13.235 : 0.5582720608534211

Na is missing : -0.03923918355508989

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

Mg <= 3.435 : -1.0112397321454145

Mg > 3.435 : -1.0064509891032933

Mg is missing : -1.0087653926083089

Class 5 (Type=containers)

Decision Stump

Classifications

Al <= 1.39 : -1.304228141792331

Al > 1.39 : 0.4425655866297459

Al is missing : -0.16806601432919818

Class 6 (Type=tableware)

Decision Stump

Classifications

Mg <= 2.545 : 0.43383721079484533

Mg > 2.545 : -1.2544805112976867

Mg is missing : -0.03222935552982984

Class 7 (Type=headlamps)

Decision Stump

Classifications

Ba <= 0.335 : -0.4739281938254218

Ba > 0.335 : 0.8987256493029212

Ba is missing : 0.06390601866042694

Iteration 5

Class 1 (Type=build wind float)

Decision Stump

Classifications

Mg <= 2.6950000000000003 : -1.3278127594422378

Mg > 2.6950000000000003 : 0.12642561884291104

Mg is missing : -0.02923276276220053

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

Ca <= 10.365 : -0.13982964258349884

Ca > 10.365 : 1.1283546035187195

Ca is missing : 0.01782573250957373

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Ca <= 8.315000000000001 : -1.0800165837501217

Ca > 8.315000000000001 : 0.24817968251383232

Ca is missing : 0.01963159602876408

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

K <= 0.695 : -1.0034680271222178

K > 0.695 : -1.0078647416633013

K is missing : -1.0039537620492798

Class 5 (Type=containers)

Decision Stump

Classifications

Al <= 2.145 : -0.41865539582729566

Al > 2.145 : 1.7037770086421247

Al is missing : -0.11890394107778232

Class 6 (Type=tableware)

Decision Stump

Classifications

Ba <= 0.03 : 0.5921261040703607

Ba > 0.03 : -1.1230979768912595

Ba is missing : 0.11015385314539525

Class 7 (Type=headlamps)

Decision Stump

Classifications

K <= 1.72 : -0.05304871436427787

K > 1.72 : 2.2587475589193344

K is missing : 0.12077801317075941

Iteration 6

Class 1 (Type=build wind float)

Decision Stump

Classifications

RI <= 1.515895 : 1.8944379083626486

RI > 1.515895 : -0.13551475807303737

RI is missing : -0.03605447239712195

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

Mg <= 3.615 : -0.2305120331240358

Mg > 3.615 : 0.678863547566388

Mg is missing : 0.010625800864957777

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

RI <= 1.517005 : 0.9359166505507821

RI > 1.517005 : -0.358789519963297

RI is missing : -0.016503308329743206

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

K <= 0.695 : -1.0015516253569847

K > 0.695 : -1.0036392627351636

K is missing : -1.0017780887383043

Class 5 (Type=containers)

Decision Stump

Classifications

Ca <= 11.245000000000001 : -0.5122419360087852

Ca > 11.245000000000001 : 1.5972666241876825

Ca is missing : 0.1885109774646479

Class 6 (Type=tableware)

Decision Stump

Classifications

Na <= 13.785 : -1.1529578494772086

Na > 13.785 : 0.2728708054722382

Na is missing : -0.14293665464243233

Class 7 (Type=headlamps)

Decision Stump

Classifications

RI <= 1.52237 : -0.19814508130632935

RI > 1.52237 : 1.8211121366336918

RI is missing : 0.08307331311379129

Iteration 7

Class 1 (Type=build wind float)

Decision Stump

Classifications

Si <= 72.13 : 0.9506001028696065

Si > 72.13 : -0.21662226347183128

Si is missing : 0.03890239177300575

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

K <= 0.325 : -0.5706196502477481

K > 0.325 : 0.2810516348892613

K is missing : 0.07209164174139647

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Al <= 1.1150000000000002 : 0.8854749966799629

Al > 1.1150000000000002 : -0.43060055617317705

Al is missing : -0.09722445115175463

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

K <= 0.695 : -1.0007647242348723

K > 0.695 : -1.0017714182830668

K is missing : -1.0008810516778175

Class 5 (Type=containers)

Decision Stump

Classifications

Na <= 13.45 : 0.3630616119946647

Na > 13.45 : -0.9414606848444609

Na is missing : -0.14150526112495684

Class 6 (Type=tableware)

Decision Stump

Classifications

RI <= 1.5130750000000002 : 1.3231934305179902

RI > 1.5130750000000002 : -0.4329753773226928

RI is missing : -0.23369772668238084

Class 7 (Type=headlamps)

Decision Stump

Classifications

Ca <= 9.765 : 0.26992232509219793

Ca > 9.765 : -1.272092118055596

Ca is missing : -0.013127477810641528

Iteration 8

Class 1 (Type=build wind float)

Decision Stump

Classifications

Si <= 72.935 : -0.25999668520719066

Si > 72.935 : 0.7056296303595466

Si is missing : 0.07093918662577427

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

RI <= 1.517985 : -0.40313483240721903

RI > 1.517985 : 0.44243163458399914

RI is missing : -0.038167749687875396

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Si <= 73.015 : 0.31585648273616923

Si > 73.015 : -1.1642634117305866

Si is missing : 0.08645436801941506

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

K <= 0.695 : -1.000310566312026

K > 0.695 : -1.0006602249240275

K is missing : -1.0003470492619455

Class 5 (Type=containers)

Decision Stump

Classifications

K <= 0.745 : -0.4857317671681488

K > 0.745 : 1.0923414512654739

K is missing : -0.12779268133630667

Class 6 (Type=tableware)

Decision Stump

Classifications

RI <= 1.51973 : 0.11804013344888621

RI > 1.51973 : -1.0998536580333795

RI is missing : -0.16894238955160257

Class 7 (Type=headlamps)

Decision Stump

Classifications

Mg <= 2.22 : 0.5277869814775417

Mg > 2.22 : -0.6683189457777949

Mg is missing : -0.1585710712283353

Iteration 9

Class 1 (Type=build wind float)

Decision Stump

Classifications

RI <= 1.517195 : -0.7278420089533632

RI > 1.517195 : 0.36817094452950344

RI is missing : 0.03717227287640789

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

RI <= 1.5173100000000002 : 0.5922855508033389

RI > 1.5173100000000002 : -0.30273273478641854

RI is missing : 0.01228382206166364

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

Fe <= 0.36 : -0.2019362567115969

Fe > 0.36 : 2.9183171000857535

Fe is missing : -0.13332125219600655

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

K <= 0.695 : -1.0001458033868804

K > 0.695 : -1.000415137464237

K is missing : -1.0001759475585787

Class 5 (Type=containers)

Decision Stump

Classifications

Al <= 1.39 : -1.1167840404572382

Al > 1.39 : 0.4460605942014665

Al is missing : 0.14912644690219357

Class 6 (Type=tableware)

Decision Stump

Classifications

RI <= 1.518265 : -0.7145791858123308

RI > 1.518265 : 0.6851886761698831

RI is missing : 0.07552126925250309

Class 7 (Type=headlamps)

Decision Stump

Classifications

Al <= 1.2349999999999999 : 0.8261026249044369

Al > 1.2349999999999999 : -0.38175141088210623

Al is missing : -0.060198868542487696

Iteration 10

Class 1 (Type=build wind float)

Decision Stump

Classifications

RI <= 1.516205 : 0.8294164592068389

RI > 1.516205 : -0.23713426864879564

RI is missing : -0.08984851401021525

Class 2 (Type=build wind non-float)

Decision Stump

Classifications

RI <= 1.517985 : -0.35441483708463606

RI > 1.517985 : 0.46031768208273427

RI is missing : 0.0523046475395645

Class 3 (Type=vehic wind float)

Decision Stump

Classifications

RI <= 1.5213899999999998 : 0.33435027752317215

RI > 1.5213899999999998 : -0.8711163099378488

RI is missing : 0.09924540210549065

Class 4 (Type=vehic wind non-float)

Decision Stump

Classifications

K <= 0.695 : -1.0000556572088883

K > 0.695 : -1.0001242773664576

K is missing : -1.0000622503510719

Class 5 (Type=containers)

Decision Stump

Classifications

RI <= 1.523895 : 0.14862966853585757

RI > 1.523895 : -1.4128602854036865

RI is missing : -0.10044166319585068

Class 6 (Type=tableware)

Decision Stump

Classifications

RI <= 1.51973 : 0.2660356448080819

RI > 1.51973 : -1.0670069811957876

RI is missing : -0.03944197301537403

Class 7 (Type=headlamps)

Decision Stump

Classifications

Ca <= 9.765 : 0.3014832766293715

Ca > 9.765 : -1.1449418326457257

Ca is missing : 6.636092982469747E-4

Number of performed iterations: 10

Time taken to build model: 0.22 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 153 71.4953 %

Incorrectly Classified Instances 61 28.5047 %

Kappa statistic 0.6033

Mean absolute error 0.1027

Root mean squared error 0.2392

Relative absolute error 48.5178 %

Root relative squared error 73.7155 %

Total Number of Instances 214

=== Detailed Accuracy By Class ===

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

0.786 0.181 0.679 0.786 0.728 0.585 0.885 0.768 build wind float

0.737 0.174 0.700 0.737 0.718 0.557 0.876 0.772 build wind non-float

0.176 0.015 0.500 0.176 0.261 0.264 0.812 0.345 vehic wind float

? 0.000 ? ? ? ? ? ? vehic wind non-float

0.615 0.000 1.000 0.615 0.762 0.775 0.920 0.857 containers

0.778 0.015 0.700 0.778 0.737 0.726 0.992 0.840 tableware

0.828 0.027 0.828 0.828 0.828 0.801 0.939 0.818 headlamps

Weighted Avg. 0.715 0.126 0.713 0.715 0.703 0.596 0.890 0.751

=== Confusion Matrix ===

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

55 13 1 0 0 1 0 | a = build wind float

15 56 2 0 0 1 2 | b = build wind non-float

9 4 3 0 0 1 0 | c = vehic wind float

0 0 0 0 0 0 0 | d = vehic wind non-float

0 3 0 0 8 0 2 | e = containers

1 0 0 0 0 7 1 | f = tableware

1 4 0 0 0 0 24 | g = headlamps

Rules

=== Run information ===

Scheme: weka.classifiers.rules.DecisionTable -X 1 -S "weka.attributeSelection.BestFirst -D 1 -N 5"

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

Decision Table:

Number of training instances: 214

Number of Rules : 38

Non matches covered by Majority class.

Best first.

Start set: no attributes

Search direction: forward

Stale search after 5 node expansions

Total number of subsets evaluated: 47

Merit of best subset found: 75.701

Evaluation (for feature selection): CV (leave one out)

Feature set: 1,4,6,7,10

Time taken to build model: 0.12 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 146 68.2243 %

Incorrectly Classified Instances 68 31.7757 %

Kappa statistic 0.5507

Mean absolute error 0.1724

Root mean squared error 0.2768

Relative absolute error 81.4177 %

Root relative squared error 85.2945 %

Total Number of Instances 214

=== Detailed Accuracy By Class ===

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

0.886 0.264 0.620 0.886 0.729 0.585 0.839 0.670 build wind float

0.671 0.167 0.689 0.671 0.680 0.507 0.792 0.720 build wind non-float

0.176 0.015 0.500 0.176 0.261 0.264 0.570 0.163 vehic wind float

? 0.000 ? ? ? ? ? ? vehic wind non-float

0.538 0.010 0.778 0.538 0.636 0.629 0.873 0.532 containers

0.667 0.010 0.750 0.667 0.706 0.695 0.853 0.514 tableware

0.586 0.000 1.000 0.586 0.739 0.742 0.926 0.813 headlamps

Weighted Avg. 0.682 0.148 0.702 0.682 0.669 0.560 0.815 0.652

=== Confusion Matrix ===

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

62 7 1 0 0 0 0 | a = build wind float

21 51 1 0 1 2 0 | b = build wind non-float

11 3 3 0 0 0 0 | c = vehic wind float

0 0 0 0 0 0 0 | d = vehic wind non-float

1 5 0 0 7 0 0 | e = containers

0 3 0 0 0 6 0 | f = tableware

5 5 1 0 1 0 17 | g = headlamps

Trees

=== Run information ===

Scheme: weka.classifiers.trees.RandomTree -K 0 -M 1.0 -V 0.001 -S 1

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

RandomTree

==========

Ba < 0.34

| Mg < 2.56

| | Na < 13.79

| | | Ca < 12.87

| | | | Na < 13.5

| | | | | RI < 1.52

| | | | | | Na < 12.47 : headlamps (1/0)

| | | | | | Na >= 12.47 : containers (2/0)

| | | | | RI >= 1.52 : containers (10/0)

| | | | Na >= 13.5 : build wind non-float (4/0)

| | | Ca >= 12.87 : build wind non-float (6/0)

| | Na >= 13.79

| | | RI < 1.52 : tableware (9/0)

| | | RI >= 1.52

| | | | RI < 1.52 : build wind non-float (2/0)

| | | | RI >= 1.52 : headlamps (1/0)

| Mg >= 2.56

| | Al < 1.42

| | | Mg < 3.87

| | | | RI < 1.52

| | | | | RI < 1.52 : build wind float (3/0)

| | | | | RI >= 1.52

| | | | | | Si < 72.72 : vehic wind float (5/0)

| | | | | | Si >= 72.72

| | | | | | | Al < 1.25 : build wind non-float (3/0)

| | | | | | | Al >= 1.25

| | | | | | | | Mg < 3.56 : vehic wind float (2/0)

| | | | | | | | Mg >= 3.56 : build wind non-float (1/0)

| | | | RI >= 1.52

| | | | | Na < 13.62

| | | | | | RI < 1.52

| | | | | | | Si < 73.47 : build wind float (30/0)

| | | | | | | Si >= 73.47

| | | | | | | | RI < 1.52 : build wind non-float (1/0)

| | | | | | | | RI >= 1.52 : build wind float (1/0)

| | | | | | RI >= 1.52

| | | | | | | Ca < 8.72

| | | | | | | | Mg < 3.55 : build wind float (1/0)

| | | | | | | | Mg >= 3.55 : build wind non-float (7/0)

| | | | | | | Ca >= 8.72

| | | | | | | | Na < 13.04 : build wind non-float (3/0)

| | | | | | | | Na >= 13.04

| | | | | | | | | RI < 1.52 : build wind float (14/0)

| | | | | | | | | RI >= 1.52 : headlamps (1/0)

| | | | | Na >= 13.62

| | | | | | Si < 71.25 : build wind non-float (2/0)

| | | | | | Si >= 71.25

| | | | | | | Si < 72.75

| | | | | | | | Ba < 0.13

| | | | | | | | | Fe < 0.27

| | | | | | | | | | Al < 0.65

| | | | | | | | | | | Na < 14.12

| | | | | | | | | | | | Na < 13.88 : build wind float (1/0)

| | | | | | | | | | | | Na >= 13.88 : vehic wind float (1/0)

| | | | | | | | | | | Na >= 14.12 : build wind float (3/0)

| | | | | | | | | | Al >= 0.65 : build wind float (9/0)

| | | | | | | | | Fe >= 0.27 : vehic wind float (1/0)

| | | | | | | | Ba >= 0.13 : vehic wind float (1/0)

| | | | | | | Si >= 72.75 : vehic wind float (2/0)

| | | Mg >= 3.87

| | | | Si < 71.87

| | | | | RI < 1.52 : build wind float (1/0)

| | | | | RI >= 1.52 : vehic wind float (1/0)

| | | | Si >= 71.87 : build wind non-float (6/0)

| | Al >= 1.42

| | | Ca < 8.32

| | | | Fe < 0.22

| | | | | Si < 72.97 : build wind non-float (20/0)

| | | | | Si >= 72.97

| | | | | | Ca < 7.8 : build wind float (1/0)

| | | | | | Ca >= 7.8 : build wind non-float (11/0)

| | | | Fe >= 0.22

| | | | | RI < 1.52 : build wind float (2/0)

| | | | | RI >= 1.52 : build wind non-float (2/0)

| | | Ca >= 8.32

| | | | Si < 72.5

| | | | | RI < 1.52 : vehic wind float (4/0)

| | | | | RI >= 1.52 : build wind non-float (1/0)

| | | | Si >= 72.5

| | | | | RI < 1.52 : build wind non-float (4/0)

| | | | | RI >= 1.52

| | | | | | Na < 12.88 : build wind float (2/0)

| | | | | | Na >= 12.88

| | | | | | | RI < 1.52 : build wind float (1/0)

| | | | | | | RI >= 1.52 : build wind non-float (2/0)

Ba >= 0.34

| RI < 1.52

| | K < 1.57 : headlamps (23/0)

| | K >= 1.57

| | | Al < 2.66 : headlamps (1/0)

| | | Al >= 2.66 : containers (1/0)

| RI >= 1.52

| | RI < 1.52 : build wind float (1/0)

| | RI >= 1.52

| | | Na < 12.54 : build wind non-float (1/0)

| | | Na >= 12.54 : headlamps (2/0)

Size of the tree : 97

Time taken to build model: 0.01 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances 150 70.0935 %

Incorrectly Classified Instances 64 29.9065 %

Kappa statistic 0.5936

Mean absolute error 0.0854

Root mean squared error 0.2923

Relative absolute error 40.3512 %

Root relative squared error 90.0687 %

Total Number of Instances 214

=== Detailed Accuracy By Class ===

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

0.757 0.139 0.726 0.757 0.741 0.612 0.809 0.629 build wind float

0.697 0.159 0.707 0.697 0.702 0.540 0.769 0.600 build wind non-float

0.471 0.051 0.444 0.471 0.457 0.409 0.710 0.251 vehic wind float

? 0.000 ? ? ? ? ? ? vehic wind non-float

0.846 0.025 0.688 0.846 0.759 0.746 0.911 0.591 containers

0.444 0.020 0.500 0.444 0.471 0.450 0.712 0.246 tableware

0.724 0.016 0.875 0.724 0.792 0.768 0.854 0.671 headlamps

Weighted Avg. 0.701 0.111 0.705 0.701 0.701 0.593 0.795 0.576

=== Confusion Matrix ===

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

53 11 6 0 0 0 0 | a = build wind float

13 53 4 0 2 2 2 | b = build wind non-float

5 4 8 0 0 0 0 | c = vehic wind float

0 0 0 0 0 0 0 | d = vehic wind non-float

0 1 0 0 11 0 1 | e = containers

0 4 0 0 1 4 0 | f = tableware

2 2 0 0 2 2 21 | g = headlamps

(Tree is 97 large, too big to fit all in one screen nicely)

**Summary of Findings**

Most Accurate: By classified accuracy then the most successful was the Metadata LogitBoost (I guess this model also used trees.DecisionStump) This is the most extensive model out of the 6

Close second was Trees, being similar to the LogitBoost as it used DecisionStumps within meta.

Most interpretable: The ZeroR would be but other than base case it would most likely be Bayes as it’s based on probability of Word = class, combination of word = class.