Attribute Evaluation :

Evaluator: weka.attributeSelection.InfoGainAttributeEval

Search: weka.attributeSelection.Ranker -T -1.7976931348623157E308 -N -1

Relation: filebalancedWEKAfinal-weka.filters.unsupervised.attribute.Remove-R2-13,15-18,20-22-weka.filters.unsupervised.attribute.Remove-R4-19-weka.filters.unsupervised.attribute.Remove-R11,13,16,19-20,22-27-weka.filters.unsupervised.attribute.Remove-R1-weka.filters.unsupervised.attribute.Remove-R11-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R23-24-weka.filters.unsupervised.attribute.Remove-R10-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R11-12,15-weka.filters.unsupervised.attribute.Remove-R11,14-15-weka.filters.unsupervised.attribute.Remove-R5-weka.filters.unsupervised.attribute.Remove-R1

Instances: 186

Attributes: 12

       Attack

       DissolvedO2discretize

       salinitydiscretize

       temperaturediscretize

       precipitationdiscretize

       pressurediscretize

       Direction

       MoonPhase3daysextended

       WindSpeed_minmax

       Turbidity_minmax

       Turtle_minmax

       Crablandings_minmax

Evaluation mode: evaluate on all training data

=== Attribute Selection on all input data ===

Search Method:

Attribute ranking.

Attribute Evaluator (supervised, Class (nominal): 1 Attack):

Information Gain Ranking Filter

Ranked attributes:

0.2592   9 WindSpeed_minmax

0.18318 12 Crablandings_minmax

0.13589 11 Turtle_minmax

0.12141   7 Direction

0.10815 10 Turbidity_minmax

0.04195   8 MoonPhase3daysextended

0.03895   3 salinitydiscretize

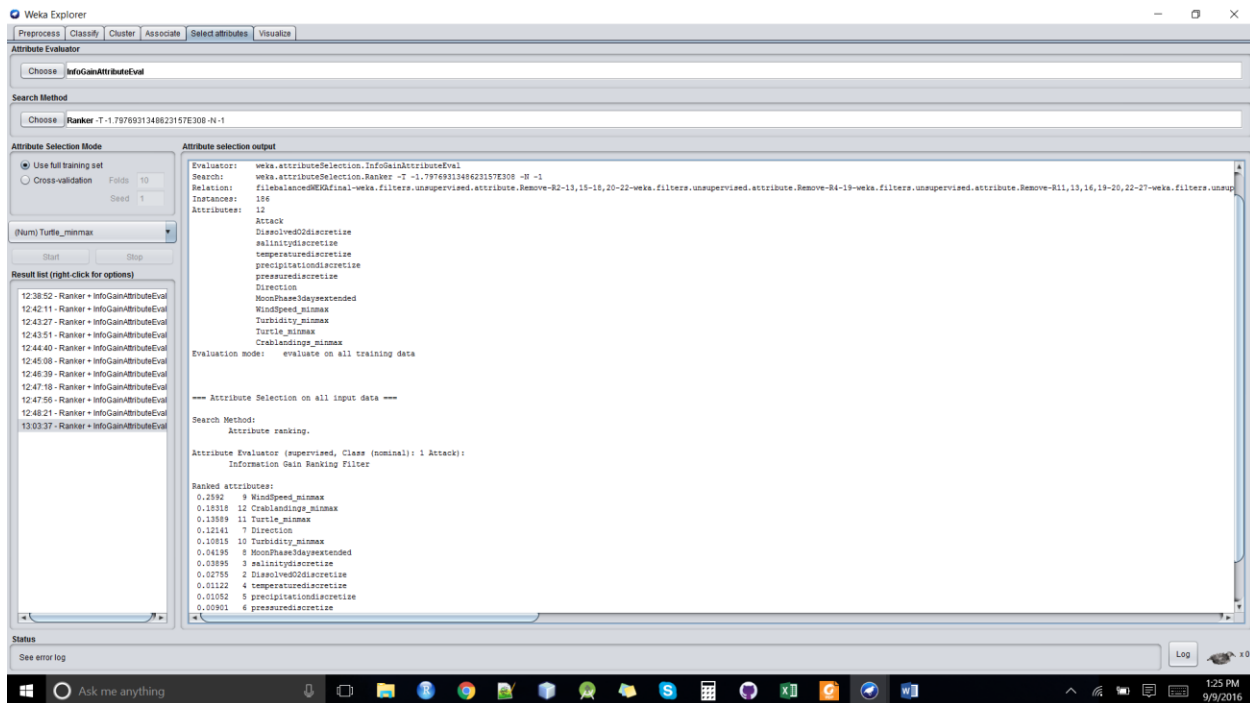**0.02755   2 DissolvedO2discretize**

0.01122   4 temperaturediscretize

0.01052   5 precipitationdiscretize

0.00901   6 pressurediscretize

Selected attributes: 9,12,11,7,10,8,3,2,4,5,6 : 11

Screenshot from weka:

Weka Explorer

Preprocess | Classify | Cluster | Associate | Select attributes | Visualize

Attribute Evaluator

Choose InfoGainAttributeEval

Search Method

Choose Ranker -T -1.7976931348623157E308 -N -1

Attribute Selection Mode

- Use full training set
- Cross-validation   Folds 10
  Seed 1

(Num) Turtle_minmax

Start   Stop

Result list (right-click for options)

12:38:52 - Ranker + InfoGainAttributeEval
12:42:11 - Ranker + InfoGainAttributeEval
12:43:27 - Ranker + InfoGainAttributeEval
12:43:51 - Ranker + InfoGainAttributeEval
12:44:40 - Ranker + InfoGainAttributeEval
12:45:08 - Ranker + InfoGainAttributeEval
12:45:39 - Ranker + InfoGainAttributeEval
12:47:18 - Ranker + InfoGainAttributeEval
12:47:56 - Ranker + InfoGainAttributeEval
12:48:21 - Ranker + InfoGainAttributeEval
13:03:37 - Ranker + InfoGainAttributeEval

Attribute selection output

```
Evaluator:    weka.attributeSelection.InfoGainAttributeEval
Search:       weka.attributeSelection.Ranker -T -1.7976931348623157E308 -N -1
Relation:     filebalancedWEKAfinal-weka.filters.unsupervised.attribute.Remove-R2-13,15-18,20-22-weka.filters.unsupervised.attribute.Remove-R4-19-weka.filters.unsupervised.attribute.Remove-R11,13,16,19-20,22-27-weka.filters.unsup
Instances:    186
Attributes:   12
              Attack
              DissolvedO2discretize
              salinitydiscretize
              temperaturediscretize
              precipitationdiscretize
              pressurediscretize
              Direction
              MoonPhase3daysextended
              WindSpeed_minmax
              Turbidity_minmax
              Turtle_minmax
              Crablandings_minmax
Evaluation mode:    evaluate on all training data


=== Attribute Selection on all input data ===

Search Method:
        Attribute ranking.

Attribute Evaluator (supervised, Class (nominal): 1 Attack):
        Information Gain Ranking Filter

Ranked attributes:
 0.2592    9 WindSpeed_minmax
 0.18318  12 Crablandings_minmax
 0.13589  11 Turtle_minmax
 0.12141   7 Direction
 0.10815  10 Turbidity_minmax
 0.04195   8 MoonPhase3daysextended
 0.03895   3 salinitydiscretize
 0.02755   2 DissolvedO2discretize
 0.01122   4 temperaturediscretize
 0.01052   5 precipitationdiscretize
 0.00901   6 pressurediscretize
```

Status

See error log

Log

Classification :

=== Run information ===

Scheme: weka.classifiers.trees.J48 -O -U -M 2

Relation: filebalancedWEKAfinal-weka.filters.unsupervised.attribute.Remove-R2-13,15-18,20-22-weka.filters.unsupervised.attribute.Remove-R4-19-weka.filters.unsupervised.attribute.Remove-R11,13,16,19-20,22-27-weka.filters.unsupervised.attribute.Remove-R1-weka.filters.unsupervised.attribute.Remove-R11-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R23-24-weka.filters.unsupervised.attribute.Remove-R10-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R11-12,15-weka.filters.unsupervised.attribute.Remove-R11,14-15-weka.filters.unsupervised.attribute.Remove-R5-weka.filters.unsupervised.attribute.Remove-R1-weka.filters.unsupervised.attribute.Remove-R6-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R10

Instances: 186

Attributes: 9

        Attack

        DissolvedO2discretize

salinitydiscretize

temperaturediscretize

precipitationdiscretize

Direction

MoonPhase3daysextended

WindSpeed_minmax

Turtle_minmax

Test mode: 10-fold cross-validation

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

J48 unpruned tree

WindSpeed_minmax <= 0.424837

| salinitydiscretize = Medium

| | Direction = SW

| | | WindSpeed_minmax <= 0.300654: No (2.0)

| | | WindSpeed_minmax > 0.300654: No (2.0/1.0)

| | Direction = SSW

| | | MoonPhase3daysextended = New

| | | | Turtle_minmax <= 0.196172: No (3.0/1.0)

| | | | Turtle_minmax > 0.196172: Yes (2.0)

| | | MoonPhase3daysextended = First quarter: No (2.0)

| | | MoonPhase3daysextended = Full: No (4.0/2.0)

| | | MoonPhase3daysextended = Waning gibbous: No (0.0)

| | | MoonPhase3daysextended = Third quarter: No (1.0)

| | | MoonPhase3daysextended = Waxing gibbous: No (1.0)

| | | MoonPhase3daysextended = Waning crescent: No (0.0)

| | | MoonPhase3daysextended = Waxing crescent: No (0.0)

| | Direction = NE: No (1.0)

| | Direction = SSE: No (3.0)

| | Direction = S

| | | MoonPhase3daysextended = New: No (4.0)

| | | MoonPhase3daysextended = First quarter: No (2.0/1.0)

| | | MoonPhase3daysextended = Full: No (2.0)

| | | MoonPhase3daysextended = Waning gibbous: No (2.0)

| | | MoonPhase3daysextended = Third quarter: No (0.0)

| | | MoonPhase3daysextended = Waxing gibbous: No (0.0)

| | | MoonPhase3daysextended = Waning crescent: No (0.0)

| | | MoonPhase3daysextended = Waxing crescent: No (0.0)

| | Direction = NNE: No (1.0)

| | Direction = ESE: No (4.0)

| | Direction = E: No (3.0/1.0)

| | Direction = ENE: No (1.0)

| | Direction = WSW: No (1.0)

| | Direction = SE: Yes (1.0)

| | Direction = W: No (1.0)

| salinitydiscretize = High

| | Direction = SW

| | | MoonPhase3daysextended = New: No (3.0)

| | | MoonPhase3daysextended = First quarter: No (3.0/1.0)

| | | MoonPhase3daysextended = Full: No (4.0)

| | | MoonPhase3daysextended = Waning gibbous: No (0.0)

| | | MoonPhase3daysextended = Third quarter: No (0.0)

| | | MoonPhase3daysextended = Waxing gibbous: No (1.0)

| | | MoonPhase3daysextended = Waning crescent: No (0.0)

| | | MoonPhase3daysextended = Waxing crescent: No (0.0)

| | Direction = SSW

| | | MoonPhase3daysextended = New: No (6.0)

| | | MoonPhase3daysextended = First quarter: No (2.0)

| | | MoonPhase3daysextended = Full

| | | | WindSpeed_minmax <= 0.222222: No (2.0/1.0)

| | | | WindSpeed_minmax > 0.222222: No (3.0)

| | | MoonPhase3daysextended = Waning gibbous: Yes (1.0)

| | | MoonPhase3daysextended = Third quarter: No (2.0)

| | | MoonPhase3daysextended = Waxing gibbous: No (0.0)

| | | MoonPhase3daysextended = Waning crescent: No (0.0)

| | | MoonPhase3daysextended = Waxing crescent: No (0.0)

| | Direction = NE: No (3.0)

| | Direction = SSE

| | | MoonPhase3daysextended = New: No (4.0)

| | | MoonPhase3daysextended = First quarter: No (1.0)

| | | MoonPhase3daysextended = Full

| | | | Turtle_minmax <= 0.033493: No (2.0/1.0)

| | | | Turtle_minmax > 0.033493: Yes (2.0)

| | | MoonPhase3daysextended = Waning gibbous: No (0.0)

| | | MoonPhase3daysextended = Third quarter: No (2.0)

| | | MoonPhase3daysextended = Waxing gibbous: No (1.0)

| | | MoonPhase3daysextended = Waning crescent: No (1.0)

| | | MoonPhase3daysextended = Waxing crescent: No (0.0)

| | Direction = S

| | | Turtle_minmax <= 0.272727: No (7.0)

| | | Turtle_minmax > 0.272727: Yes (2.0)

| | Direction = NNE: No (1.0)

| | Direction = ESE: No (3.0/1.0)

| | Direction = E

| | | WindSpeed_minmax <= 0.215686: No (7.0)

| | | WindSpeed_minmax > 0.215686

| | | | WindSpeed_minmax <= 0.30719: Yes (4.0)

| | | | WindSpeed_minmax > 0.30719

| | | | | WindSpeed_minmax <= 0.366013: No (2.0/1.0)

| | | | | WindSpeed_minmax > 0.366013: No (2.0)

| | Direction = ENE: No (9.0)

| | Direction = WSW: No (3.0/1.0)

| | Direction = SE

| | | MoonPhase3daysextended = New: Yes (2.0)

| | | MoonPhase3daysextended = First quarter: No (1.0)

| | | MoonPhase3daysextended = Full: No (3.0)

| | | MoonPhase3daysextended = Waning gibbous: No (0.0)

| | | MoonPhase3daysextended = Third quarter: Yes (1.0)

| | | MoonPhase3daysextended = Waxing gibbous: No (0.0)

| | | MoonPhase3daysextended = Waning crescent: No (0.0)

| | | MoonPhase3daysextended = Waxing crescent: No (0.0)

| | Direction = W: No (1.0)

| salinitydiscretize = Low: Yes (2.0)

WindSpeed_minmax > 0.424837

| MoonPhase3daysextended = New: Yes (12.0)

| MoonPhase3daysextended = First quarter

| | Direction = SW: Yes (4.0)

| | Direction = SSW: Yes (1.0)

| | Direction = NE: No (1.0)

| | Direction = SSE: Yes (0.0)

| | Direction = S: Yes (1.0)

| | Direction = NNE: Yes (0.0)

| | Direction = ESE: Yes (1.0)

| | Direction = E: Yes (0.0)

| | Direction = ENE: Yes (0.0)

| | Direction = WSW: Yes (3.0)

| | Direction = SE: Yes (0.0)

| | Direction = W: Yes (0.0)

| MoonPhase3daysextended = Full

| | Direction = SW: Yes (10.0)

| | Direction = SSW

| | | temperaturediscretize = High: Yes (5.0)

| | | temperaturediscretize = Medium: No (2.0/1.0)

| | | temperaturediscretize = Low: Yes (0.0)

| | Direction = NE: Yes (0.0)

| | Direction = SSE: Yes (0.0)

| | Direction = S: Yes (0.0)

| | Direction = NNE: Yes (0.0)

| | Direction = ESE: Yes (0.0)

| | Direction = E: No (2.0)

| | Direction = ENE: Yes (0.0)

| | Direction = WSW: Yes (5.0)

| | Direction = SE: Yes (0.0)

| | Direction = W: Yes (0.0)

| MoonPhase3daysextended = Waning gibbous: Yes (0.0)

| MoonPhase3daysextended = Third quarter: No (3.0)

| MoonPhase3daysextended = Waxing gibbous: Yes (0.0)

| MoonPhase3daysextended = Waning crescent: Yes (0.0)

| MoonPhase3daysextended = Waxing crescent: Yes (0.0)

Number of Leaves :   107

Size of the tree :   129

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances   **149**   **80.1075 %**

Incorrectly Classified Instances   37   19.8925 %

Kappa statistic   0.5686

Mean absolute error   0.2172

Root mean squared error   0.4178

Relative absolute error   45.7399 %

Root relative squared error   85.7572 %

Total Number of Instances   186

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	0.886	0.333	0.808	0.886	0.845	0.573	0.818	0.829	No
	0.667	0.114	0.787	0.667	0.722	0.573	0.818	0.719	Yes
Weighted Avg.	0.801	0.248	0.800	0.801	0.797	0.573	0.818	0.786	

=== Confusion Matrix ===

a   b   <-- classified as

101 13 | a = No

24 48 | b = Yes

Clustering :

=== Run information ===

Scheme: weka.clusterers.SimpleKMeans -init 0 -max-candidates 100 -periodic-pruning 10000 -min-density 2.0 -t1 -1.25 -t2 -1.0 -N 2 -A "weka.core.EuclideanDistance -R first-last" -I 500 -num-slots 1 -S 10

Relation: filebalancedWEKAfinal-weka.filters.unsupervised.attribute.Remove-R2-13,15-18,20-22-weka.filters.unsupervised.attribute.Remove-R4-19-weka.filters.unsupervised.attribute.Remove-R11,13,16,19-20,22-27-weka.filters.unsupervised.attribute.Remove-R1-weka.filters.unsupervised.attribute.Remove-R11-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R23-24-weka.filters.unsupervised.attribute.Remove-R10-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R11-12,15-weka.filters.unsupervised.attribute.Remove-R11,14-15-weka.filters.unsupervised.attribute.Remove-R5-weka.filters.unsupervised.attribute.Remove-R1-weka.filters.unsupervised.attribute.Remove-R6-weka.filters.unsupervised.attribute.Remove-R9-weka.filters.unsupervised.attribute.Remove-R10

Instances: 186

Attributes: 9

      Attack

      DissolvedO2discretize

      salinitydiscretize

      temperaturediscretize

      precipitationdiscretize

      Direction

      MoonPhase3daysextended

      WindSpeed_minmax

      Turtle_minmax

Test mode: evaluate on training data

=== Clustering model (full training set) ===

kMeans

======

Number of iterations: 3

Within cluster sum of squared errors: 406.2214960418787

Initial starting points (random):

Cluster 0: No,Low,Medium,High,Low,SSW,New,0.346405,0.148325

Cluster 1: Yes,Medium,High,Medium,Low,SW,'First quarter',0.431373,0

Missing values globally replaced with mean/mode

Final cluster centroids:

Attribute	Cluster# Full Data (186.0)	0 (99.0)	1 (87.0)
Attack	No	No	Yes
DissolvedO2discretize	Medium	Medium	Medium
salinitydiscretize	High	Medium	High
temperaturediscretize	High	High	High
precipitationdiscretize	Low	Low	Low
Direction	SSW	SSW	SW
MoonPhase3daysextended	Full	New	Full
WindSpeed_minmax	0.3456	0.2704	0.4311
Turtle_minmax	0.156	0.1013	0.2182

Time taken to build model (full training data) : 0.01 seconds

=== Model and evaluation on training set ===

Clustered Instances

0   99 (53%)

1   87 (47%)