Jixing (Jacey) Man CS699 Final Project

Part 1: Pre-Process and File Organization

There are total of 6 classification method I used to complete the project, see below list for the 6 method I used:

NaiveBayes

Logistic

RandomForest

RandomTree

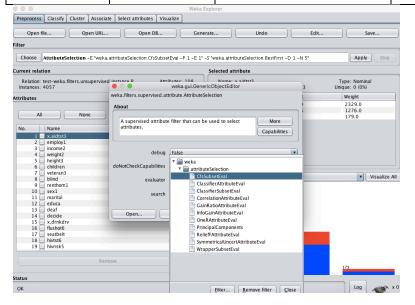
IBK(KNN)

OneR

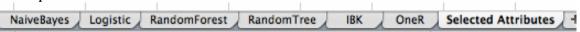
There are 4 different attributed selection methods I used, and I have saved train/test files accordingly to each method while run the classification algorithms. I will pact all train/test files and also with the train/test file that is re-named to "best-xxx.arff". I actually did not do any pre-processing of the data itself, so there are no extra-step involved here.

See below screenshot of how I selected the attribute selection on weka. I select the filter on the preprocess page, select the method, and hit apply, and do the same for both train and test to reduced-train and reduced-test, and save the files as separate train and test files for each attribute selection method. For example, reduced_test1.arff and reduced_train1.arff would be arff files for CfsSubSetEval.

Train/Test Set	Set 1	Set 2	Set 3	Set 4
Attribute Evaluator	CfsSubSetEval	CorrelationAttributeEval	OneRAttributeEv al	ClassifierAttributeEval
Search Method	GreedyStepwi se	Ranker	Ranker	Ranker



There are 5 different spreadsheet in the zip file, 4 of which are individual results of each selection and their classification methods along attributed selected. Example:



The "Man_Jixing_Results_Summary.xlsx" file is a result summary of recall and confutation matrix of all test run.

The reason why I use recall and Corrected instances as the main performance measure matrix for this project is because for havarth3, the data is focused on whether the person was ever told to have some form of arthritis etc, so I believe it is best to focus on Recall, the true positive rate.

Please see screenshot below for the summary and the excel file for detail.

Part 2: Result Analysis Table

I have put the table of the accuracy rate of all test run and also the table of each test run's confusion matrix. All other performance measure and selected attributes from weka's output for the 24 models are at the Part 5, the bottom of this document and is also in the supplement excel files, the excel files are much easier to view, so I suggest to look at the excel file for detailed weka output information instead.

The accuracy and recall table Overall Accuracy RandomForest RandomTree IBK NaiveBayes Logistic OneR Average CfsSubSetEval 73.9463 72,146 69.2877 73.5765 72.0565333 Correct Instance Incorrect Instance 26.0537 25.5608 27.8531 30.7123 31.0574 26.4235 27.9434667 CorrelationAttributeEval 75.3019 64.9988 73.5765 71.1404 Correct Instance 70.9884 74.1188 67.858 29.0116 24.6981 25.8812 35.0012 26.4235 28.8596 Incorrect Instance 32.142 OneRAttributeEval 70.9884 75.3266 74.5625 65.7136 67.858 73.5765 71.3376 Correct Instance Incorrect Instance 29.0116 24.6734 25.4375 34.2864 32.142 26,4235 28.6624 ClassifierAttributeEval Correct Instance 70.9884 65.7875 67.858 73.5765 71.4071833 29.0116 24.6981 24,9692 34.2125 32.142 26,4235 28.57615 Incorrect Instance NaiveBaves Logistic RandomForest OneR Recall RandomTree IBK CfsSubSetEval class2 0.788 0.839 0.837 0.817 0.82 0.935 0.83933333 0.344 0.48716667 class1 0.644 0.558 0.494 0.449 0.434 Weight 0.739 0.744 0.721 0.693 0.736 0.72033333 CorrelationAttributeEval 0.703 0.868 0.751 0.935 0.82333333 0.889 0.794 class2 class1 0.722 0.527 0.451 0.452 0.453 0.344 0.4915 Weight 0.71 0.753 0.741 0.65 0.697 0.736 0.7145 0.935 0.82416667 OneRAttributeEval 0.703 0.869 0.887 0.757 0.794 class2 class1 0.722 0.527 0.468 0.461 0.453 0.344 0.49583333 Weight 0.71 0.753 0.746 0.657 0.679 0.736 0.7135 0.935 0.82633333 ClassifierAttributeEval 0.897 0.761 class2 0.703 0.868 0.794 0.722 0.527 0.463 0.456 0.453 0.344 0.49416667 0.71 0.753 0.658 0.736 0.71433333 Weight 0.75 0.679

The confusion matrix table

CfsSubSetEv				CorrelationA	ttributeEval		
Confusion M	а	b		Confusion M	l a	b	
NaiveBayes	2118		a=2	NaiveBayes	1891	797	a=
	487	882	b=1		380	989	b=
Logistic	а	b		Logistic	а	b	
	2256	432			2334	354	
	605	764			648	721	
RandomFore	a	b		RandomFore	a	b	
	2251	437			2390	298	
	693	676			752	617	
RandomTree	a	b		RandomTree	a	b	
	2197	491			2018	670	
	755	614			750	619	
IBK	a	b		IBK	а	b	
-	2203	485			2133	555	
	775	594			749	620	
OneR	a	b		OneR	a	b	
	2514	174		- Citati	2514	174	
	898				898	471	
OneRAttribu	teEval			ClassifierAt	tributeEval		
Confusion M	а	b		Confusion M	1 a	b	
NaiveBayes	1891	797	a=2	NaiveBayes	1891	797	a=2
	200			-	380		
L = =1=41=	380	989	b=1		380	989	b=
Logistic	380 a	989 b	b=1	Logistic	a 380	989 b	b=
Logistic			b=1	Logistic			
Logistic	a	b	b=1	Logistic	a	b	
RandomFore	a 2335 648	b 353	b=1	Logistic RandomFore	a 2334 648	b 354	
	a 2335 648	b 353 721	b=1		a 2334 648	b 354 721	
	a 2335 648	b 353 721 b	b=1		a 2334 648	b 354 721	
	a 2335 648 a 2384 728	b 353 721 b 304	b=1		a 2334 648 a 2410 735	b 354 721 b 278	
RandomFore	a 2335 648 a 2384 728	b 353 721 b 304 641	b=1	RandomFore	a 2334 648 a 2410 735	b 354 721 b 278 634	
RandomFore	a 2335 648 a 2384 728	b 353 721 b 304 641 b	b=1	RandomFore	a 2334 648 a 2410 735	b 354 721 b 278 634 b	
RandomFore RandomTree	a 2335 648 a 2384 728 a 2035	b 353 721 b 304 641 b 653	b=1	RandomFore	a 2334 648 a 2410 735 a 2045	b 354 721 b 278 634 b 643	
RandomFore	a 2335 648 a 2384 728 a 2035 738	b 353 721 b 304 641 b 653 631	b=1	RandomFore RandomTree	a 2334 648 a 2410 735 a 2045 745	b 354 721 b 278 634 b 643 624	
RandomFore RandomTree	a 2335 648 a 2384 728 a 2035 738 a	b 353 721 b 304 641 b 653 631 b	b=1	RandomFore RandomTree	a 2334 648 a 2410 735 a 2045 745 a	b 354 721 b 278 634 b 643 624 b 555	
RandomFore RandomTree	a 2335 648 a 2384 728 a 2035 738 a 2133 749	b 353 721 b 304 641 b 653 631 b 555 620	b=1	RandomFore RandomTree	a 2334 648 a 2410 735 a 2045 745 a 2133	b 354 721 b 278 634 b 643 624 b 555 620	
RandomFore RandomTree	a 2335 648 a 2384 728 a 2035 738 a 2133	b 353 721 b 304 641 b 653 631 b 555 620 b	b=1	RandomFore RandomTree	a 2334 648 a 2410 735 a 2045 745 a 2133	b 354 721 b 278 634 b 643 624 b 555	

Part 3: Best Results and Discussion

The best test result I believe I achieved with all the 24 runs are *with CfsSubSetEval Attribute selection and Logistic classifier*. The specific detail for this test run is below. The reason why I believe this is the best run, is because out of all the test results, it gives me the accuracy rate of 74.4392 and incorrect instance of 25.5608. The reason why I believe that *CfsSubSetEval Attribute selection and Logistic classifier* is the best performance is because even though out of all 24 test, this one actually did not gave me the highest correct instance, I believe OneAttribute-Logistic actually has a higher percentage of correct instance. However, overall, the average correct instance of 72.0565% and average recall 0.83933 for CfSubSetEval is the highest out of all 4 attribute selection, and logistics is the highest out of the 6 classifier used with CfsSubaSetEval. As I mentioned before, I think for this project, if we are trying to test out the true positives for havarth3, then the test run with the highest recall rate should be the best performance test. Therefore I believe, in-combination of the attribute selection and classification methods CfsSubaSetEval –Logistic gives the best results.

```
Time taken to test model on supplied test set: 3.44 seconds
=== Summarv ===
Correctly Classified Instances
                                    3020
                                                      74.4392 %
                                                      25.5608 %
Incorrectly Classified Instances
                                    1037
                                       0.4101
Kappa statistic
Mean absolute error
                                       0.3343
Root mean squared error
                                       0.4111
Relative absolute error
                                     74.7508 %
Root relative squared error
                                     86.9479 %
Total Number of Instances
                                    4057
=== Detailed Accuracy By Class ===
                TP Rate FP Rate Precision Recall F-Measure MCC
                                                                       ROC Area
                                                                                 PRC Area Class
                                                                                 0.881
                0.839
                        0.442
                                 0.789
                                           0.839
                                                    0.813
                                                               0.412
                                                                       0.801
                0.558
                        0.161
                                 0.639
                                           0.558
                                                    0.596
                                                                       0.801
                                                                                 0.654
                                                               0.412
                                                                                          1
Weighted Avg.
                0.744
                        0.347
                                 0.738
                                           0.744
                                                    0.740
                                                              0.412
                                                                       0.801
                                                                                 0.805
=== Confusion Matrix ===
        b
           <-- classified as
   а
 2256 432 |
              a = 2
 605 764
```

А	D			E.
Selected at	ttributes: 2,13,2	20,22,31,41,4	5,64,67,87,10	2:11
	employ1			
	deaf			
	pneuvac4			
	diffwalk			
	physhlth			
	persdoc2			
	chccopd1			
	x.age80			
	x.age65yr			Ĺ
	x.rfhlth		,	
	x.exteth3			

Part 4: Attribute and other Observations Discussions

From the above list of attribute, I believe that employ1, deaf, pneuvac4, diffwalk and physhlth are the 5 most relevant to the class attribute. First of all, when I was doing rank search method with other attribute selections, diffwalk and physhlth do rank fairly high on some of the other attribute selections, such as for

ClassififerAttributeEval etc. Also for my best performing model, these are the top 5 attribute.

What I learned from this project is that, for all the attribute selections I have chosen, *CfsSubSetEval* actually has the least attribute, but it actually gaves the best overall performance compared to other methods. It is easy to make assumption that the more attribute you have, or the "more data" you have, you should be able to make better predication, but my results from this project proves this is not true. I believe the reason

for this, is when you add more attribute or "more data" when you are doing predictive modeling, the large amount of less relevant attribute or data can actually become "noise" that would negatively affect your predication outcome. For better performance, it is actually better just to find out and select the most relevant attribute or data (the relevant data must be correct though, otherwise making prediction with incorrect smaller amount data can cause bigger mistakes), this way it actually reduced the "noise" in the data or with smaller relevant data, it even reduced the possibility of bad data with error.

There are some other interesting things I noticed in my test results; For OneR classifer, my output results and my confusion matrix are the same across the board. At first I thought this is a mistake in the way I processed the test runs, but no matter how I adjust the methods, I always got the same results for OneR. I think this is due to how OneR is processed, that it will always use only one rule with the smallest total error. Since I am running test on the same BRFSS data over and over again, this is probably why I am getting the same results for all OneR test runs.

I also noticed that RandomTree and IBK produced the worst performance out of the 6 classifier I used. I think this could be there are many attributes (more than 10) when I am processing the test runs. However RandomTree and IBK(KNN) are better to be used to predicate smaller amount of attributes.

Part 5: All results screenshots of all Weka Output Window and selected attributes.

A			В	(D		E	F	G	H
est 1	Att	ribute Evalu	ator	Search N	Method					
ttributes Selected	Cfs	SubSetEval		Greedy5	Stepwise					
lassifier Method	Nai	iveBayes								
assinci metiloa	1101	vebuyes								
=== Summary ===										
Correctly Class:	ified Inst	ances	3000		73.9463	%				
Incorrectly Class	sified In	stances	1057		26.0537	%				
Kappa statistic			0.42	59						
Mean absolute en	rror		0.28	6						
Root mean square	ed error		0.43	6						
Relative absolut			63.95							
Root relative so		or	92,20							
Total Number of			4057							
rotat Namber of	Instances	,	4037							
=== Detailed Acc	ruracy Ry	Class								
betarted Act	caracy by	C (a33								
	TP Rate	ED Date	Precision	Recall	F-Measure	MCC	POC Area	PRC Area	Class	
	0.788	0.356	0.813	0.788	0.800	0.426	0.801	0.883	2	
	0.644	0.212	0.607	0.644	0.625	0.426	0.801	0.654	1	
Weighted Avg.	0.739	0.212	0.744	0.739	0.741	0.426	0.801	0.805	1	
weighted Avg.	0.739	0.30/	0.744	0.739	0.741	0.420	0.001	0.003		
=== Confusion Ma										
=== Confusion Ma	ittix ===									
a b <	- classifi	ind an								
		teu as								
	a = 2									
487 882	b = 1									

C(-C |-C-1E -|

	GreedyStepv	vise										
assifier Me Logistic				0								
				I								
Time taken to tes	t model or	n supplie	d test set	: 3.44 sec	conds							
=== Summary ===												
Correctly Classif			3020 1037		74.4392 25.5608							
Cappa statistic			0.41									
lean absolute erro Root mean squared			0.33 0.41									
elative absolute			74.75									
oot relative squ		r	86.94	79 %								
otal Number of I	nstances		4057									
== Detailed Accu	racy By C	lass ===										
			Precision					rea PRC				
			0.789 0.639		0.813 0.596	0.412 0.412				2		
			0.738		0.740	0.412				-		
- Candu-i 1:												
== Confusion Mat	TX ===											
a b <	classified	d as										
2256 432 a	_											
605 764 b	= 1											
	/a Search Me											
ributes Se CfsSubSetE	va GreedySte	pwise										
ssifier Me RandomFor	est				0							
					0							
		et ===			0							
=== Evaluation (on test s		lied test	set: 6.4	1 seconds							
=== Evaluation (on test s		lied test	set: 6.4	1 seconds							
=== Evaluation of	on test s		lied test	set: 6.4	1 seconds	;						
=== Evaluation of Time taken to to	on test s	on supp										
=== Evaluation of Time taken to to to ==== Summary ==== Correctly Class:	on test s est model ified Ins	on supp	292	7	72	2.1469 % 7.8531 %						
=== Evaluation of Time taken to	on test s est model ified Ins ssified I	on supp	292 113	7 0 0.3471	72	.1469 %						
=== Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Class Kappa statistic Mean absolute e	on test s est model ified Ins ssified I	on supp	292 113	7 0 0.3471 0.3423	72	.1469 %						
=== Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Class Kappa statistic Mean absolute e Root mean square	on test s est model ified Ins ssified I rror ed error	on supp	292 113	7 0 0.3471 0.3423 0.4265	72	.1469 %						
=== Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Clas Kappa statistic Mean absolute en Root mean squar Relative absolute	on test s est model ified Ins ssified I rror ed error te error	on supp	292 113((7 0 0.3471 0.3423	72	.1469 %						
=== Evaluation of Time taken to to the Time taken to to the Time taken to to the Time taken to the Time taken taken to the Time taken take	on test s est model ified Ins ssified I rror ed error te error quared er	on supp	292 113((7 0 0.3471 0.3423 0.4265 6.5485 % 0.2028 %	72	.1469 %						
=== Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Class Kappa statistic Mean absolute en Root mean square Relative absolute Root relative so Total Number of	on test s est model ified Ins ssified I rror ed error te error quared er Instance	tances	292 1131 (70 90 405	7 0 0.3471 0.3423 0.4265 6.5485 % 0.2028 %	72	.1469 %						
=== Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Class: Incorrectly Class: Mappa statistic Mean absolute en Root mean square Relative absolute Root relative so Total Number of	on test s est model ified Ins ssified I rror ed error te error quared er Instance	tances ristances rror rs	292: 113: 1 7: 9: 405:	7 0 0.3471 0.3423 0.4265 6.5485 % 0.2028 %	72 27	2.1469 % 7.8531 %		ROC Ar.	ea PRO	Area	Clas	S
=== Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Class Kappa statistic Mean absolute en Root mean square Relative absolute Root relative so Total Number of	on test s est model ified Ins ssified I rror ed error te error quared er Instance	tances ristances rror rs	292 1131 (70 90 405	7 0 0.3471 0.3423 0.4265 6.5485 % 0.2028 %	72 27	2.1469 % 7.8531 %		ROC Arr 0.768		C Area	Class 2	S
=== Evaluation of Time taken to to the Time taken to to the Time taken to to the Time taken to the Time taken take	on test sest model ified Instance error te error te error Instance curacy By TP Rate 0.837 0.494	tances nstances ror class = PP Rat 0.506 0.163	292' 1130' 100' 100' 100' 100' 100' 100' 10	7 0 0.3471 0.3423 0.4265 6.5485 0.2028 7 ion Reca 0.83 0.49	72 27 27 11 F-Me 7 0.79 4 0.54	2.1469 % 1.8531 % Pasure 1	MCC 0.351 0.351	0.768 0.768	0.8	361 509		S
=== Evaluation of Time taken to to the Time taken to to the Time taken to to the Time taken to the Time taken taken taken taken absolute en Total Number of the Time taken tak	on test sest model ified Ins ssified I rror ed error quared er Instance curacy By TP Rate 0.837	tances ror class = FP Rat 0.506	292' 113' 113' 10' 10' 10' 10' 10' 10' 10' 10' 10' 10	7 0 0.3471 0.3423 0.4265 6.5485 % 0.2028 % 7	72 27 27 11 F-Me 7 0.79 4 0.54	2.1469 % 1.8531 % Pasure 1	MCC 0.351	0.768	0.8	361	2	S
=== Evaluation of Time taken to to the second of the secon	on test sest model ified Inserting I	tances ror s Class = FP Rat 0.506 0.163 0.390	292' 1130' 100' 100' 100' 100' 100' 100' 10	7 0 0.3471 0.3423 0.4265 6.5485 0.2028 7 ion Reca 0.83 0.49	72 27 27 11 F-Me 7 0.79 4 0.54	2.1469 % 1.8531 % Pasure 1	MCC 0.351 0.351	0.768 0.768	0.8	361 509	2	S
assifier Me RandomFor === Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Class: Kappa statistic Mean absolute ei Root mean square Relative absolut Root relative so Total Number of === Detailed Aco Weighted Avg. === Confusion Ma a b <	on test sest model ified Inserting I	tances references Class = PP Rat 0.506 0.163 0.390	292' 1130' 100' 100' 100' 100' 100' 100' 10	7 0 0.3471 0.3423 0.4265 6.5485 0.2028 7 ion Reca 0.83 0.49	72 27 27 11 F-Me 7 0.79 4 0.54	2.1469 % 1.8531 % Pasure 1	MCC 0.351 0.351	0.768 0.768	0.8	361 509	2	S
=== Evaluation of Time taken to to === Summary === Correctly Class: Incorrectly Class: In	ified Ins ssified I rror ed error te error turacy By TP Rate 0.837 0.494 0.721	tances references Class = PP Rat 0.506 0.163 0.390	292' 1130' 100' 100' 100' 100' 100' 100' 10	7 0 0.3471 0.3423 0.4265 6.5485 0.2028 7 ion Reca 0.83 0.49	72 27 27 11 F-Me 7 0.79 4 0.54	2.1469 % 1.8531 % Pasure 1	MCC 0.351 0.351	0.768 0.768	0.8	361 509	2	S

Test 1 Attributes Se	Attribute Eva	Search Met	thod								
Attributes Se											
	CfsSubSetEv	GreedySter	owise								
lassifier Me	RandomTree				Y						
											0
=== Eval	uation or	n test se	t ===								
Time tak	en to tes	st model	on suppli	ed test set	: 3.66 se	conds					
=== Summ	nary ===										
	y Classi1			2811		69.2877					
	tly Class	sified In	stances	1246		30.7123	%				
Kappa st	olute eri			0.279 0.34	-						
	n squared			0.48							
	absolute			76.97							
	ative squ		or	102.93							
	mber of]			4057	15 0						
locat Nu	illiber or a	ins cances		4037							<u>-</u>
=== Deta	iled Accu	iracy By	Class ===								
Deta	iz cou mocc	nac, b,	cass								
		TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Ar	ea Class	
		0.817	0.551	0.744	0.817	0.779	0.282	0.687	0.772	2	
		0.449	0.183	0.556	0.449	0.496	0.282	0.687	0.522	1	
Weighted	l Ava.	0.693	0.427	0.681	0.693	0.684	0.282	0.687	0.688	-	
330											
=== Conf	usion Mat	rix ===									
a		classifi	ed as								
2197 4	91 a	a = 2									
755 6	14 j k) = 1									
					_						
											0
est 1	Attribute Ev	a Search Me	thod								
	CfsSubSetEv										
lassifier Me	IBK										
					1						
Time to	kan to t	ost model	l on suppl	ind test se	. 7 41	cocondo					
	ken to to	est model	l on suppl	ied test se	et: 7.41	seconds					
=== Sum	nmary ===			ied test se	et: 7.41	seconds	26 %				
_=== Sum Correct	mary === :ly Class:	ified Ins	stances		et: 7.41						
=== Sum Correct Incorre	mary === :ly Class: :ctly Clas	ified Ins		2797 1260	et: 7.41	68.942					
=== Sum Correct Incorre Kappa s	mary === :ly Class: :ctly Clas :tatistic	ified Ins	stances	2797 1260 0.2	2674	68.942					
_=== Sum _Correct _Incorre _Kappa s _Mean ab	mary === :ly Class: :ctly Clas	ified Ins ssified I	stances Instances	2797 1260 0.2 0.3		68.942					
=== Sum Correct Incorre Kappa s Mean ab Root me	mary === ly Class: ctly Clas tatistic solute en	ified Ins ssified l rror ed error	stances Instances	2797 1260 0.2 0.3	2674 3339	68.942					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ	mary === cly Class: ctly Clas tatistic solute en ean square re absolut	ified Ins ssified I rror ed error te error	stances Instances	2797 1260 0.2 0.3 0.5	2674 3339 5241 5691 %	68.942					
Correct Incorre Kappa s Mean ab Root me Relativ Root re	mary === cly Class: ctly Class ctatistic csolute en ean square re absolute clative so	ified Ins ssified I rror ed error te error quared er	stances Instances	2797 1260 0.2 0.3 0.5	2674 3339 5241	68.942					
Correct Incorre Kappa s Mean ab Root me Relativ Root re	mary === cly Class: ctly Clas tatistic solute en ean square re absolut	ified Ins ssified I rror ed error te error quared er	stances Instances	2797 1260 0.2 0.3 0.5 74.6 110.8	2674 3339 5241 5691 %	68.942					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	mary === ily Class: ctly Class ctatistic ssolute en an square me absolute elative so lumber of	ified Ins ssified I rror ed error te error quared er Instance	stances Instances rror es / Class ==	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 8339 5241 6691 % 4434 %	68.942 31.057	74 %				
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	mary === ily Class: ctly Class ctatistic ssolute en an square me absolute elative so lumber of	ified Ins ssified I rror ed error te error quared er Instance curacy By	stances Instances rror es / Class ==	2797 1260 0.2 0.3 0.5 74.6 110.6 4057	2674 3339 5241 5691 % 3434 %	68.942 31.057 F-Measur	re MCC			Area Cla	ass
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	mary === ily Class: ctly Class ctatistic ssolute en an square me absolute elative so lumber of	ified Ins ssified I rror ed error te error tuared er Instance curacy By TP Rate 0.820	rror es / Class == 0.566	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 3241 5691 % 3434 %	68.942 31.057 F-Measur 0.778	re MCC 0.271	0.682	0.78	36 2	nss
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	mmary === ily Class: ctly Clas	ified Ins ssified I rror ed error te error quared en Instance curacy By TP Rate 0.820 0.434	rror es / Class == 0.566 0.180	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 5241 5691 % 8434 % 1 Recall 0.820 0.434	68.942 31.057 F-Measur 0.778 0.485	re MCC 0.271 0.271	0.682 0.682	0.78 0.49	36 2 96 1	955
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	mary === ily Class: ctly Class	ified Ins ssified I rror ed error te error tuared er Instance curacy By TP Rate 0.820	rror es / Class == 0.566	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 3241 5691 % 3434 %	68.942 31.057 F-Measur 0.778	re MCC 0.271	0.682 0.682	0.78	36 2 96 1	ass
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N === Det	mary === ily Class: ctly Class	ified Inssified Instance error quared er Instance curacy By TP Rate 0.820 0.434 0.689	rror es / Class == 0.566 0.180 0.436	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 5241 5691 % 8434 % 1 Recall 0.820 0.434	68.942 31.057 F-Measur 0.778 0.485	re MCC 0.271 0.271	0.682 0.682	0.78 0.49	36 2 96 1	ass
Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N Det	amary === Ely Class: Ectly Class: Ectly Class: Estatistic Estatistic Elan square Elative sc Humber of Eailed Acc Ed Avg. Efusion Ma	ified Inssified Information of the control of the c	rror es / Class == 0.566 0.180 0.436	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 5241 5691 % 8434 % 1 Recall 0.820 0.434	68.942 31.057 F-Measur 0.778 0.485	re MCC 0.271 0.271	0.682 0.682	0.78 0.49	36 2 96 1	ass
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N === Det Weighte === Con	ty Class: ctly Class: ctly Class: ctly Class: ctatistic solute er an square er absolute slative so lumber of cailed Accord ed Avg. Ifusion Ma	ified Insisting Information In	rror es / Class == 0.566 0.180 0.436	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 5241 5691 % 8434 % 1 Recall 0.820 0.434	68.942 31.057 F-Measur 0.778 0.485	re MCC 0.271 0.271	0.682 0.682	0.78 0.49	36 2 96 1	ass
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N === Det Weighte === Con a 2203	amary === ily Class: ctly Cla	ified Insisting Information In	rror es / Class == 0.566 0.180 0.436	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 5241 5691 % 8434 % 1 Recall 0.820 0.434	68.942 31.057 F-Measur 0.778 0.485	re MCC 0.271 0.271	0.682 0.682	0.78 0.49	36 2 96 1	ess
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N === Det Weighte === Con a 2203	ty Class: ctly Class: ctly Class: ctly Class: ctatistic solute er an square er absolute slative so lumber of cailed Accord ed Avg. Ifusion Ma	ified Insisting Information In	rror es / Class == 0.566 0.180 0.436	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 5241 5691 % 8434 % 1 Recall 0.820 0.434	68.942 31.057 F-Measur 0.778 0.485	re MCC 0.271 0.271	0.682 0.682	0.78 0.49	36 2 96 1	oss
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N === Det Weighte === Con a 2203	amary === ily Class: ctly Cla	ified Insisting Information In	rror es / Class == 0.566 0.180 0.436	2797 1260 0.2 0.3 0.5 74.6 110.8 4057	2674 3339 5241 5691 % 8434 % 1 Recall 0.820 0.434	68.942 31.057 F-Measur 0.778 0.485	re MCC 0.271 0.271	0.682 0.682	0.78 0.49	36 2 96 1	ass

```
Attribute Eva Search Method
Attributes Se CfsSubSetEva GreedyStepwise
Classifier Me OneR
                                                     0
Time taken to test model on supplied test set: 3.88 seconds
=== Summary ===
 Correctly Classified Instances
                                       2985
                                                          73.5765 %
                                                          26.4235 %
 Incorrectly Classified Instances
                                       1072
                                         0.321
 Kappa statistic
 Mean absolute error
                                          0.2642
 Root mean squared error
                                         0.514
                                        59.0897 %
 Relative absolute error
                                       108.7135 %
 Root relative squared error
 Total Number of Instances
                                       4057
=== Detailed Accuracy By Class ===
                  TP Rate FP Rate Precision Recall
                                                       F-Measure MCC
                                                                           ROC Area PRC Area Class
                  0.935
                           0.656
                                    0.737
                                               0.935
                                                        0.824
                                                                   0.361
                                                                            0.640
                                                                                      0.732
                                                       0.468
                                                                                      0.473
                  0.344
                           0.065
                                    0.730
                                               0.344
                                                                   0.361
                                                                           0.640
                                                                                               1
 Weighted Avg.
                  0.736
                           0.456
                                    0.735
                                               0.736
                                                        0.704
                                                                   0.361
                                                                            0.640
                                                                                      0.644
 === Confusion Matrix ===
        b <-- classified as</pre>
  2514 174 | a = 2
  898 471 |
                 b = 1
```

Selected attributes: 2,13,2	.0,22,31,41,46,64,67,87,102 : 11
employ1	
deaf	
pneuvac4	
diffwalk	
physhlth	
persdoc2	
chccopd1	
x.age80	
x.age65yr	
x.rfhlth	
x.exteth3	

-	Test 1			te Evaluator		Search Me Ranker									_
1	Attributes So	elected	Correla	tionAttribute											
(Classifier Me	ethod	NaiveB	ayes											
H															
C	=== Summ	nary ===													
H	Correctl	ly Classifi	ad Inct	ances	2886	2		70.988	21 &						
		tly Classi			1177			29.01							
	Kappa st				(0.3963									
		solute erro				0.2914									
		n squared				0.5131									
-		absolute				5.1718 9 8.512 9									
		lative squa umber of Ir			405		ъ								
			_												
C	=== Deta	niled Accur	acy By	Class ===	:										
		Т	P Rate	FP Rate	Precis	ion Red	call	F-Measu	re MC	2	ROC A	rea	PRC A	rea (Class
			.703	0.278	0.833			0.763		106	0.776		0.859		2
			.722	0.297	0.554			0.627		106	0.776		0.591		1
H	Weighted	i Avg. 0	.710	0.284	0.739	0.7	710	0.717	0.4	106	0.776)	0.769		
H	=== Conf	fusion Matr	iv												
H	COIII	aston raci	-^												
Н	а	b < 0	lassifi	ed as											
Н			= 2	eu as											
Н	380 9		- 2 = 1												
Н	500	,05 6													
								_							
C															
Te	est 1	Attribute Eva	earch Me	thod							-		,		is.
		Attribute Eva		thod			-						J		ix
				thod							•		J		IX
At		CorrelationA		thod	-						Į.		J		K
At	ttributes Se	CorrelationA		thod									J		IX
At	ttributes Se	CorrelationA		thod									<u> </u>		IX.
CI	ttributes Se lassifier Me	CorrelationA Logistic	tanker		ed Test	SAT' M	•								K
CI	ttributes Se lassifier Me	CorrelationA	tanker		ed test	set: v.	•								IX.
CI	ttributes Se lassifier Me	CorrelationA Logistic en to test	tanker		ed test	set: v	•								IX.
CI	ttributes Se lassifier Me lime tak	CorrelationA Logistic en to test ary ===	Mode L	on suppli			•	onas							N.
CI	ttributes Se lassifier Me lime tak summ	CorrelationA Logistic en to test ary === y Classifi	model model	on suppli	3055	5	•	onas 75.30							
CI	ttributes Se lassifier Me lime tak === Summ Correctlu	CorrelationA Logistic en to test ary === y Classifi tly Classi	model model	on suppli	3055 1002	5	•	onas							
CI	ttributes Se lassifier Me lime tak === Summ Correctl Incorrect Kappa st	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic	model model ed Inst	on suppli	3055 1002	5 2 0.4169	•	onas 75.30							ix .
CI	Ilme tak Summ Correctl Incorrect Kappa st Mean abs	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro	model model ed Inst	on suppli	3055 1002	5 2 0.4169 0.3203	•	onas 75.30							ix .
CI	IIME TAK Summ Correctl Incorrec Kappa st Mean abs Root mea	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro n squared	model ed Inst fied In r error	on suppli	3055 1007 (5 2 0.4169 0.3203 0.4088	.13 Sec	onas 75.30							ix .
CI CI	ttributes Se lassifier Me lime tak see Summ Correctl Incorrect Kappa st Mean abs Root mea	CorrelationA Logistic en to test ary === y Classifi tly Classi atl Static olute erro n squared absolute	model model fied Inst r error error	on suppli ances stances	3055 1007 (5 2 0.4169 0.3203 0.4088 1.6344	.13 Sec	onas 75.30							
CI CI II II II	IIME TAK IIME TAK Summ Correctl Incorrect Kappa st Mean abs Root mea	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro n squared	model ed Inst fied In r error error	on suppli ances stances	3055 1007 (5 2 0.4169 0.3203 0.4088 1.6344	.13 Sec	onas 75.30							
CI CI II II	ttributes Se lassifier Me lime τακ === Summ Correctl Incorrec Kappa st Mean abs Root mean Relative Root rela Total Nu	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of In	model model fied Inst ferror error red err stances	on suppli ances stances	305: 100: ((7: 86: 405:	5 2 0.4169 0.3203 0.4088 1.6344	.13 Sec	onas 75.30							K
CI	ttributes Se lassifier Me lime τακ === Summ Correctl Incorrec Kappa st Mean abs Root mean Relative Root rela Total Nu	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of In iled Accur	model model fied Inst freerror error error error eerror stances acy By	on suppli	3055 1000 ((7.7 8.6 405.5	5 2 3.4169 3.3203 3.4088 1.6344 5.4607	.13 sec	onas 75.30	81 %						K
CI	ttributes Se lassifier Me lime τακ === Summ Correctl Incorrec Kappa st Mean abs Root mean Relative Root rela Total Nu	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of In iled Accur	model model model referror error red err stances acy By P Rate	on suppli	3055 1007 ((778 84 4055	5 2 0.4169 0.3203 0.4088 1.6344 5.4607 7	.13 sec	75.30 24.69	81 % re MC			Area			
CI CI	ttributes Se lassifier Me lime τακ === Summ Correctl Incorrec Kappa st Mean abs Root mean Relative Root rela Total Nu	CorrelationA Logistic en to test ary === y Classifi tly Classi atl Static olute erro n squared absolute ative squa mber of In iled Accur	model model fied In rerror error red err stances acy By P Rate	on suppli ances stances or Class === FP Rate 0.473	305: 1007 ((77: 88: 405: Precis:	5 2 3.4169 3.3203 3.4088 1.6344 5.4607 7	ls sec	75.30 24.69 F-Measu 0.823	81 % re MC 0.	423	0.80	4	0.880)	2
CI	ITTIBLE TAKE IT	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of In iled Accur	model ed Inst fied In r error error red err stances acy By P Rate .868	on suppli ances stances or Class === FP Rate 0.473 0.132	3055 1007 (((778 86 4055 Precis: 0.783 0.671	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	.13 sec	75.30 24.69 F-Measu 0.823 0.590	re MC 0. 0.	423 423	0.80 0.80	4 4	0.880 0.655)	
Art CI	ttributes Se lassifier Me lime τακ === Summ Correctl Incorrec Kappa st Mean abs Root mean Relative Root rela Total Nu	CorrelationA Logistic en to test ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of In iled Accur	model model fied In rerror error red err stances acy By P Rate	on suppli ances stances or Class === FP Rate 0.473	305: 1007 ((77: 88: 405: Precis:	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	ls sec	75.30 24.69 F-Measu 0.823	re MC 0. 0.	423	0.80	4 4	0.880)	2
Art CI	ttributes Se lassifier Me lime tak === Summ Correctl Incorrect Kappa st Mean abs Root meal Root meal Root rel Total Num === Deta	CorrelationA Logistic en to test ary === y Classifitly Classif	model model fied Inst frerror error red err stances acy By P Rate .868 .527	on suppli ances stances or Class === FP Rate 0.473 0.132	3055 1007 (((778 86 4055 Precis: 0.783 0.671	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	.13 sec	75.30 24.69 F-Measu 0.823 0.590	re MC 0. 0.	423 423	0.80 0.80	4 4	0.880 0.655)	2
Art CI	ttributes Se lassifier Me lime tak === Summ Correctl Incorrect Kappa st Mean abs Root meal Root meal Root rel Total Num === Deta	CorrelationA Logistic en to test ary === y Classifitly Classif	model model model referror error stances acy By P Rate .868 .527 .753	on suppliances stances or Class === FP Rate 0.473 0.132 0.358	3055 1007 (((778 86 4055 Precis: 0.783 0.671	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	.13 sec	75.30 24.69 F-Measu 0.823 0.590	re MC 0. 0.	423 423	0.80 0.80	4 4	0.880 0.655)	2
Art CI	ttributes Se lassifier Me lime tak === Summ Correctly Incorrect Kappa st Mean abs Root meal Relative Root relative Total Nut === Deta Weighted === Confi	CorrelationA Logistic en to test ary === y Classifit tly Classic olute erro n squared absolute ative squa mber of In iled Accur T 0 Avg. 0 usion Matr	model ed Inst fied In r error error stances acy By P Rate .868 .527 .753 ix ===	on suppliances stances or Class === FP Rate 0.473 0.132 0.358	3055 1007 (((778 86 4055 Precis: 0.783 0.671	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	.13 sec	75.30 24.69 F-Measu 0.823 0.590	re MC 0. 0.	423 423	0.80 0.80	4 4	0.880 0.655)	2
Art CI	ttributes Se lassifier Me I Ime Tak I Ime Tak I Incorrect I Incorrect Kappa st Mean abs Root mea Relative Root relative Total Nu I Deta Weighted Confi	CorrelationA Logistic en to test ary === y Classifitly Classifitly Classifitly Classifitly colute error n squared absolute ative squa mber of In iled Accur T 0 Avg. 0 usion Matr b < c 54 a	model ed Inst fied In r error error stances acy By P Rate .868 .527 .753 ix === lassifi = 2	on suppliances stances or Class === FP Rate 0.473 0.132 0.358	3055 1007 (((778 86 4055 Precis: 0.783 0.671	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	.13 sec	75.30 24.69 F-Measu 0.823 0.590	re MC 0. 0.	423 423	0.80 0.80	4 4	0.880 0.655)	2
Ar Cl	ttributes Se lassifier Me lime tak === Summ Correctly Incorrect Kappa st Mean abs Root meal Relative Root relative Total Nut === Deta Weighted === Confi	CorrelationA Logistic en to test ary === y Classifitly Classifitly Classifitly Classifitly colute error n squared absolute ative squa mber of In iled Accur T 0 Avg. 0 usion Matr b < c 54 a	model ed Inst fied In r error error stances acy By P Rate .868 .527 .753 ix ===	on suppliances stances or Class === FP Rate 0.473 0.132 0.358	3055 1007 (((778 86 4055 Precis: 0.783 0.671	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	.13 sec	75.30 24.69 F-Measu 0.823 0.590	re MC 0. 0.	423 423	0.80 0.80	4 4	0.880 0.655)	2
Ar Cl	ttributes Se lassifier Me I Ime Tak I Ime Tak I Incorrect I Incorrect Kappa st Mean abs Root mea Relative Root relative Total Nu I Deta Weighted Confi	CorrelationA Logistic en to test ary === y Classifitly Classifitly Classifitly Classifitly colute error n squared absolute ative squa mber of In iled Accur T 0 Avg. 0 usion Matr b < c 54 a	model ed Inst fied In r error error stances acy By P Rate .868 .527 .753 ix === lassifi = 2	on suppliances stances or Class === FP Rate 0.473 0.132 0.358	3055 1007 (((778 86 4055 Precis: 0.783 0.671	5 2 2.4169 3.3203 3.4088 1.6344 5.4607 7	.13 sec	75.30 24.69 F-Measu 0.823 0.590	re MC 0. 0.	423 423	0.80 0.80	4 4	0.880 0.655)	2

	Se CorrelationA										
Classifier M	le RandomFore	st									
	Julillar	у									
	Correctly	Class	ified Inc	tances	3007		74.1188	%			
	Incorrectl				1050		25.8812				
	Kappa stat	istic			0.36						
	Mean absol				0.35						
	Root mean Relative a				0.41 78.94						
	Root relat	ive so	quared er		86.89						
	Total Numb	er of	Instance	S	4057						
	=== Detail	ed Aco	curacy By	Class ===	:						
			TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
			0.889	0.549	0.761	0.889	0.820	0.384	0.804	0.886	2
	Madalahad A		0.451	0.111	0.674	0.451	0.540	0.384	0.804	0.661	1
	Weighted A	vg.	0.741	0.401	0.732	0.741	0.726	0.384	0.804	0.810	
	=== Confus	ion Ma	atrix ===	:							
	a b	-	– classif	ied ac							
	2390 298			red as							
	752 617		b = 1								
Attribute	Eva Search M	ethod									
Correlatio	nA Ranker										
ļ											
RandomT	ree										
		_									_
	accified '	Insta	nces	2637		64.	9988 %				
ctly Cl	assilieu .		tances	1420		35	0012 %				
rectly	Classifie	a Ins				55.	0012 0				
rectly statis	Classifie tic	a Ins		0	.2059	33.	0012 %				
rectly statis absolut	Classifie tic e error			0	.2059 .3575	55.	.0012 %				
rectly statis absolut nean sq	Classifie tic	or		0 0 0	.2059	33.	.0012 %				
rectly statis absolut mean sq ive abs	Classifie tic e error uared erro	or or		0 0 0 79	.2059 .3575 .5762	33.	0012 %				
rectly statis absolut mean sq ive abs relativ	Classified tic e error uared erro olute erro	or or erro		0 0 0 79	.2059 .3575 .5762 .9468 % .8664 %	33.	0012 %				
rectly statis absolut mean sq ive abs relativ Number	Classified tic e error uared erro olute erro e squared of Instan	or or erro nces	r	0 0 79 121 4057	.2059 .3575 .5762 .9468 % .8664 %	35.	0012 %				
rectly statis absolut mean sq ive abs relativ Number	Classified tic e error uared erro olute erro e squared	or or erro nces	r	0 0 79 121 4057	.2059 .3575 .5762 .9468 % .8664 %	33.	0012 %				
rectly statis absolut mean sq ive abs relativ Number	Classified tic e error uared erro olute erro e squared of Instad	or or erro nces By C	r lass ===	0 0 79 121 4057	.2059 .3575 .5762 .9468 % .8664 %		asure MCC	RO	C Area F	RC Area	Class
rectly statis absolut mean sq ive abs relativ Number	Classified tic e error uared erro olute erro e squared of Instan Accuracy TP Ro 0.75:	or erro nces By C ate	r lass === FP Rate 0.548	0 0 79 121 4057 - Precisi 0.729	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740	asure MCC 0 0.20	0.0	510 0	.722	2
rectly statis absolut mean sq ive abs relativ Number etailed	Classified tic e error uared erro olute erro e squared of Instan Accuracy TP Ro 0.75:	or or erro nces By C ate 1	r lass === FP Rate 0.548 0.249	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	
statis absolut mean sq ive abs relativ Number	Classified tic e error uared erro olute erro e squared of Instan Accuracy TP Ro 0.75:	or or erro nces By C ate 1	r lass === FP Rate 0.548	0 0 79 121 4057 - Precisi 0.729	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg	Classified tic e error uared erro olute erro e squared of Instan Accuracy TP R: 0.75: 0.45:	or erro nces By C ate 1 2	r lass === FP Rate 0.548 0.249	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg	Classified tic e error uared erro olute erro e squared of Instan Accuracy TP Ro 0.75:	or erro nces By C ate 1 2	r lass === FP Rate 0.548 0.249	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg onfusio	Classified tic e error uared erro olute erro e squared of Instal Accuracy TP Ra 0.75: 0.45: . 0.650 n Matrix =	or or erro nces By C ate 1 2 0 ===	Tlass === FP Rate 0.548 0.249 0.447	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg pnfusio b 670	Classified tic e error uared error olute error e squared of Instal Accuracy TP Ra 0.75: 0.45: . 0.650 n Matrix : < class a = 2	or or erro nces By C ate 1 2 0 ===	Tlass === FP Rate 0.548 0.249 0.447	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg onfusio	Classified tic e error uared error olute error e squared of Instan Accuracy TP Ra 0.75: 0.45: . 0.650 n Matrix : < class a = 2	or or erro nces By C ate 1 2 0 ===	Tlass === FP Rate 0.548 0.249 0.447	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg pnfusio b 670	Classified tic e error uared error olute error e squared of Instal Accuracy TP Ra 0.75: 0.45: . 0.650 n Matrix : < class a = 2	or or erro nces By C ate 1 2 0 ===	Tlass === FP Rate 0.548 0.249 0.447	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg pnfusio b 670	Classified tic e error uared error olute error e squared of Instal Accuracy TP Ra 0.75: 0.45: . 0.650 n Matrix : < class a = 2	or or erro nces By C ate 1 2 0 ===	Tlass === FP Rate 0.548 0.249 0.447	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2
rectly statis absolut mean sq ive abs relativ Number etailed ted Avg pnfusio b 670	Classified tic e error uared error olute error e squared of Instal Accuracy TP Ra 0.75: 0.45: . 0.650 n Matrix : < class a = 2	or or erro nces By C ate 1 2 2 3 ===	Tlass === FP Rate 0.548 0.249 0.447	0 0 79 121 4057 - Precisi 0.729 0.480	.2059 .3575 .5762 .9468 % .8664 %	F-Mea 0.740 0.466	asure MCC 0 0.20 5 0.20)6 0.()6 0.(510 0 508 0	.722 .414	2

ributes se	CorrelationA	Ranker								
assifier Me	IBK				0					
Joiner We					_					
=== Sum	mary ===									
Juli	mar y									
		ified Inst		2753		67.858				
		sified In	stances	1304		32.142	%			
	tatistic solute er	ror		0.25 0.32						
	an square			0.56						
	e absolut			71.88						
		quared err		119.88	64 %					
Total N	umber of	Instances		4057						
=== Det	ailed Acc	curacy By	Class ===							
		TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
		0.794	0.547	0.740	0.794	0.766	0.257	0.623	0.724	2
14-2-1-		0.453	0.206	0.528	0.453	0.487	0.257	0.623	0.424	1
Weighte	a Avg.	0.679	0.432	0.668	0.679	0.672	0.257	0.623	0.623	
749 est 1	620 Attribute Eva CorrelationA	a = 2 b = 1 Search Metho Ranker	od		0					
assinci ivic	Onen									
			Į.							
:	Summary =	==								
Inco Kappa Mean Root Rela Root	rrectly C a statist absolute mean squ tive abso relative		Instances error	0.3 0.2 0.5 59.0	2642	73.5765 26.4235				
===	Detailed	Accuracy B	y Class =	==						
		TP Rat 0.935 0.344	e FP Rat 0.656 0.065	e Precision 0.737 0.730	0.935 0.344	F-Measure 0.824 0.468	MCC 0.361 0.361	ROC Area 0.640 0.640	PRC Area 0.732 0.473	Class 2 1
Weig	hted Avg.		0.456	0.735	0.736	0.704	0.361	0.640	0.644	_
	Confusion	Matrix ==	=							
			fied as							

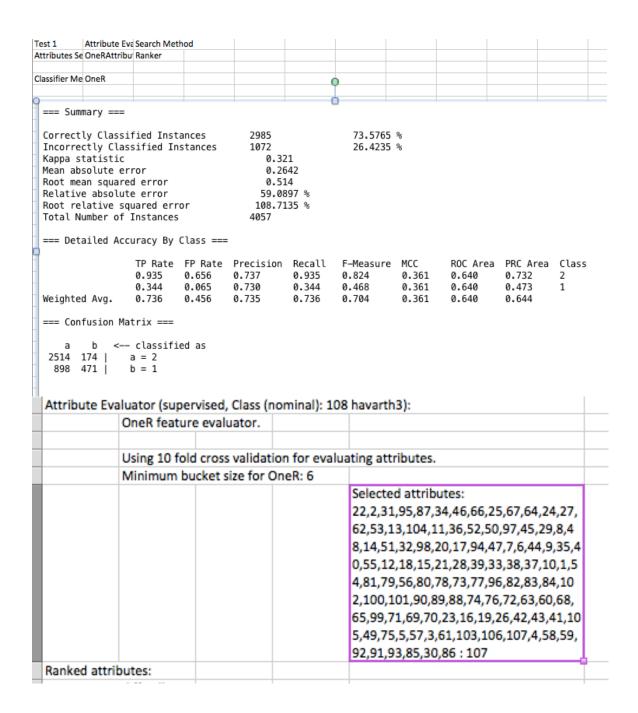
Attribute Evaluator (supervised, Class	(nominal): 108 havarth3):
Correlation Ranking Filte	г
	Selected attributes:
	64,66,22,2,67,87,97,102,20,46,
	95,31,6,25,62,13,29,104,24,69,
	27,53,59,43,26,45,98,44,47,14,
	41,16,36,48,52,105,49,34,106,
	50,78,103,76,84,10,57,61,68,8
	8,8,86,21,33,80,93,9,90,60,58,
	30,71,63,15,54,11,91,81,65,82,
	89,85,56,35,19,55,7,70,12,96,3
	2,42,77,51,100,101,94,28,5,99,
	72,75,18,1,83,74,73,79,4,3,107
Ranked attributes:	,39,40,92,38,17,23,37:107

OneRAttributeEval

Test 1		e Evaluator		h Method					
Attributes Selected	OneRAt	tributeEval	Rank	er					
Classifier Method	NaiveBa	iyes							
									_
									_
_									
=== Summary ===									
C	ified Took		2000		70.0004	0.			
Correctly Class:			2880 1177		70.9884	_			
Incorrectly Clas Kappa statistic		is cances	0.39	162	29.0116	76			
Mean absolute e			0.29						
Root mean square			0.23						
Relative absolu			65.17						
Root relative s		or	108.51						
Total Number of			4057	12 %					
Total Number of	Tils calices	,	4037						
=== Detailed Ac	curacy By	Class ===	:						
20102100 710	, 2,								
	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Cla
	0.703	0.278	0.833	0.703	0.763	0.406	0.776	0.859	2
	0.722	0.297	0.554	0.722	0.627	0.406	0.776	0.591	1
Weighted Avg.	0.710	0.284	0.739	0.710	0.717	0.406	0.776	0.769	
=== Confusion Ma	atrix ===								
-	– classifi	ed as							
1891 797	a = 2								
380 989	b = 1								
									_

	Attribute E	va Search N	lethod							
Attributes Se	OneRAttrib	u Ranker								
Cl:6:	D									
Liassifier ivie	RandomFor	est								
=== Summa	ry ===									_
	Classifi	ind Toot		2025		74.5625	0.			_
	Classifi			3025 1032		25.4375				-
(appa sta		IIICU III	3 cances	0.38	43	23.4373	-0			-
	lute erro	or		0.35						
	squared			0.41	19					
Relative	absolute	error		79.38	49 %					
	tive squa			87.12	11 %					
otal Num	ber of I	nstances		4057						_
== Detai	led Accu	racy By	Class ===							-
	-	TD Date	ED Date	Precision	Pecal 1	E Mansura	MCC	DOC Area	PRC Area	Class
		1P Rate	FP Rate 0.532	0.766	0.887	F-Measure 0.822	MCC 0.397	0.802	0.885	2
		0.468	0.332	0.678	0.468	0.554	0.397	0.802	0.661	1
leighted		0.746	0.390	0.736	0.746	0.732	0.397	0.802	0.809	-
						-				
== Confu	sion Mat	rix ===								
a	b < 0	classifi	ed as							
2384 30	14 a	= 2								
728 64	1 b	= 1								
	Attribute E		lethod							
	Attribute E		lethod							
Attributes Se	OneRAttrib		lethod							_
Attributes Se	OneRAttrib		lethod							
Attributes Se	OneRAttrib		lethod							
Attributes Se	OneRAttrib		fethod		0					
Attributes So	e OneRAttrib e Logistic		lethod		0					
Attributes Se	e OneRAttrib e Logistic		lethod		0					
Attributes So Classifier Me	OneRAttrib Logistic	u Ranker		2056	0	75 226				
Classifier Me === Sum Correct	e Logistic mary ===	u Ranker	stances	3056	0	75.3266				
Classifier Me === Sum Correct Incorree	e ConeRAttrib Logistic mary === ly Classictly Classic	u Ranker		1001		75.3266 24.6734				
Classifier Me === Sum Correct Incorrect Kappa s	e Logistic mary === ly Classictly Classtatistic	u Ranker	stances	1001	4174					
Classifier Me === Sum Correct Incorrect Kappa s Mean ab	e ConeRAttrib Logistic mary === ly Classi ctly Class tatistic solute er	u Ranker	stances	1001 0.4 0.3	4174 3203					
Correct Incorree Kappa s Mean ab Root mei	e Conerattrib Logistic mary === ly Classi ctly Class tatistic solute er an square	u Ranker	stances	1001 0.4 0.3 0.4	4174 3203 4088					
Correct Incorrec Kappa s Mean ab Root mea	e Logistic Logistic mary === ly Classi ctly Clas tatistic solute er an square e absolut	afied Installed in the same of	stances Instances	1001 0.4 0.3 71.6	4174 3203 4088 5347 %					
Correct Incorrect Kappa so Mean ab Root me Relative Root re	e OneRAttrib Logistic Mary === ly Classi ctly Clas tatistic solute er an square e absolut lative sq	ified Installed in the same of	stances Instances	1001 0.4 0.3 0.4 71.6 86.4	4174 3203 4088					
Correct Incorrect Kappa so Mean abs Root me Relative Root re	e Logistic Logistic mary === ly Classi ctly Clas tatistic solute er an square e absolut	ified Installed in the same of	stances Instances	1001 0.4 0.3 71.6	4174 3203 4088 5347 %					
Classifier Me === Sum Correct Incorrect Kappa s: Mean ab: Root mei Relative Root re Total Ni	e Conerattrib Logistic Mary === ly Classictly Clastatistic solute er an square e absolut lative squamber of	Ranker Ified Instance Ified Instance	stances Instances	1001 0.4 0.3 0.4 71.6 86.4 4057	4174 3203 4088 5347 %					
Classifier Me Correct Incorrect Kappa s: Mean ab: Root me: Relative Root re Total No	e Conerattrib Logistic Mary === ly Classictly Clastatistic solute er an square e absolut lative squamber of	Ranker Ified Instance Ified Instance	stances Instances	1001 0.4 0.3 0.4 71.6 86.4 4057	4174 3203 4088 5347 %					
Classifier Me Correct Incorrect Kappa s: Mean ab: Root me: Relative Root re Total No	e Conerattrib Logistic Mary === ly Classictly Clastatistic solute er an square e absolut lative squamber of	Ranker Ified Instance Ed error Ed error Full error Unstance Euracy By	stances Instances	1001 0.4 0.3 0.4 71.6 86.4 4057	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure	4 % ≥ MCC	ROC Area		
Classifier Me Correct Incorrect Kappa s Mean abs Root mes Relative Root re Total No	e Conerattrib Logistic Mary === ly Classictly Clastatistic solute er an square e absolut lative squamber of	ified Instance error every error every error every error every error every eve	stances Instances rror es y Class == e FP Rate 0.473	1001 0.4 0.3 0.4 71.6 86.4 4057 ==	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure 0.823	4 % P MCC 0.424	0.804	0.880	2
=== Sum Correct Incorrect Kappa s: Mean ab: Root me: Relative Root re Total N: === Deta	e OneRAttrib Logistic mary === ly Classi ctly Class tatistic solute er an square e absolut lative squader umber of ailed Acco	ified Instance error every error every error every eve	stances Instances rror es y Class == e FP Rate 0.473 0.131	1001 0.4 0.3 0.4 71.6 86.4 4057 == e Precision 0.783 0.671	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure 0.823 0.590	4 % MCC 0.424 0.424	0.804 0.804	0.880 0.655	
Classifier Me === Sum Correct Incorrect Kappa somean about mea Relative Root re Total No	e OneRAttrib Logistic mary === ly Classi ctly Class tatistic solute er an square e absolut lative squader umber of ailed Acco	ified Instance error every error every error every error every error every eve	stances Instances rror es y Class == e FP Rate 0.473	1001 0.4 0.3 0.4 71.6 86.4 4057 ==	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure 0.823	4 % P MCC 0.424	0.804	0.880	2
Correct Incorrect Kappa so Realative Root re Total Ne	e OneRAttrib Logistic mary === ly Classi ctly Class tatistic solute er an square e absolut lative squader umber of ailed Acco	ified Instance error every error every error every error every error every eve	stances Instances Y Class == P Rate 0.473 0.131 0.358	1001 0.4 0.3 0.4 71.6 86.4 4057 == e Precision 0.783 0.671	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure 0.823 0.590	4 % MCC 0.424 0.424	0.804 0.804	0.880 0.655	2
Correct Incorrect Kappa so Mean about Root me Relative Root re Total No === Deta	e OneRAttrib Logistic Logistic The Logistic The Logistic Logis	ror ed error ever eve	stances Instances Y Class == 0.473 0.131 0.358	1001 0.4 0.3 0.4 71.6 86.4 4057 == e Precision 0.783 0.671	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure 0.823 0.590	4 % MCC 0.424 0.424	0.804 0.804	0.880 0.655	2
Classifier Me === Sum Correct Incorrect Incorrect Kappa so Mean about Root mea Relative Root re Total No === Deta Weighted === Conda a	e OneRAttrib Logistic Logistic Mary === ly Classic ctly Classic tatistic solute er an square e absolut lative squamber of ailed Accord d Avg. fusion Ma	ified Instance error ed error eluared el Instance error eluared el Instance error eluared el Instance	stances Instances Y Class == 0.473 0.131 0.358	1001 0.4 0.3 0.4 71.6 86.4 4057 == e Precision 0.783 0.671	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure 0.823 0.590	4 % MCC 0.424 0.424	0.804 0.804	0.880 0.655	2
Correct Incorrect Kappa so Mean about Root me Relative Root re Total No === Deta	e OneRAttrib Logistic Lo	ror ed error ever eve	stances Instances Y Class == 0.473 0.131 0.358	1001 0.4 0.3 0.4 71.6 86.4 4057 == e Precision 0.783 0.671	4174 3203 4088 5347 % 4604 %	24.6734 F-Measure 0.823 0.590	4 % MCC 0.424 0.424	0.804 0.804	0.880 0.655	2

Test 1	Attribute Eva	Search Met	noa							
Attributes Se	OneRAttribu	Ranker								
-1										
Classifier Me	RandomTree									
=== S	ummary ===	=								
Corre	ctly Class	ified Te	-+	2666		65.71	36 %			
	rectly Class					34.28				
	statistic		ins cances		2214	34120	04 0			
	absolute e				3505					
	mean squar				5697					
	ive absolu				3826 %					
Root	relative s	quared e	rror	120.	4941 %					
- Total	Number of	Instanc	es	4057						
=== D	etailed Ac	curacy B	y Class =	==						
		TD 5		- B			Waa	DCC .		63
				e Precisio 0.734	n Recall 0.757	F-Measu 0.745	re MCC		ea PRC Ar 0.724	
		0.757 0.461	0.539 0.243	0.734 0.491	0.757 0.461	0.745 0.476	0.222 0.222		0.724	2 1
Weigh	ted Avg.	0.461	0.439	0.491	0.461	0.654	0.222	0.615	0.622	1
	ccu Avgi	0.037	01733	0.032	0.037	0.054	01222	0.013	01022	
= C	onfusion M	Matrix ==	=							
a	b <-	classi	fied as							
2035	653	a = 2								
738	631	b = 1								
	OneRAttribu	Dankar								
Attributes Se	OneKAttribu	Kanker								
°lassifier Me	IBK									
Classifier Me	IBK)				
Classifier Me	IBK									
	IBK				(
)										
=== Summa	ary ===	ied Insta	nces	2753			36			
=== Summa	ary === y Classifi			2753 1304		67.858				
=== Summa Correctly Incorrect	ary === y Classifi tly Classi									
=== Summa Correctly Incorrect Kappa sta	ary === y Classifi tly Classi	ified Ins		1304	53	67.858				
=== Summa Correctly Incorrect Kappa sta	ary === y Classifi tly Classi atistic	ified Ins or		1304 0.25	53 15	67.858				
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean	ary === y Classifi tly Classi atistic olute erro	ified Ins or error		1304 0.25 0.32	53 15 69	67.858				
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela	ary === y Classifi tly Classi tly Classi colute erro n squared absolute ative squa	ified Ins or error error ared erro	tances	1304 0.25 0.32 0.56	53 15 69 79 %	67.858				
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela	ary === y Classifi tly Classi atistic olute erro n squared absolute	ified Ins or error error ared erro	tances	1304 0.25 0.32 0.56 71.88	53 15 69 79 %	67.858				
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur	ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa	ified Ins or error error ared erro astances	tances r	1304 0.25 0.32 0.56 71.88 119.88	53 15 69 79 %	67.858				
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur	ary === y Classifi tly Classi tly Classi colute erro n squared absolute ative squa	ified Ins or error error ared erro astances	tances r	1304 0.25 0.32 0.56 71.88 119.88	53 15 69 79 %	67.858				
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur	ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of Ir	ified Ins or error error ared erro nstances racy By C	tances r lass ===	1304 0.25 0.32 0.56 71.88 119.88 4057	53 15 69 79 % 64 %	67.858 32.142	%			
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur	ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of Ir	ified Ins or error error ared erro nstances racy By C	r lass ===	1304 0.25 0.32 0.56 71.88 119.88 4057	53 15 69 79 % 64 %	67.858 32.142 F-Measure	% ! MCC	ROC Area		a Class
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur	ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of Ir iled Accur	or error error ared erro nstances racy By C FP Rate 0.794	r lass === FP Rate 0.547	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740	53 15 69 79 % 64 %	67.858 32.142 F-Measure 0.766	% MCC 0.257	0.623	0.724	2
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur	ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of Ir iled Accum	or error error ared erro astances racy By C FP Rate 0.794	r lass === FP Rate 0.547 0.206	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740 0.528	53 15 69 79 % 64 % Recall 0.794 0.453	67.858 32.142 F-Measure 0.766 0.487	% MCC 0.257 0.257	0.623 0.623	0.724 0.424	
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur	ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of Ir iled Accum	or error error ared erro astances racy By C FP Rate 0.794	r lass === FP Rate 0.547	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740	53 15 69 79 % 64 %	67.858 32.142 F-Measure 0.766	% MCC 0.257	0.623	0.724	2
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur === Deta	ary === y Classifi tly Classifi atistic olute erro n squared absolute ative squa mber of Ir iled Accur Avg. 6	or error error ared erro nstances racy By C TP Rate 0.794 0.453 0.679	r lass === FP Rate 0.547 0.206	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740 0.528	53 15 69 79 % 64 % Recall 0.794 0.453	67.858 32.142 F-Measure 0.766 0.487	% MCC 0.257 0.257	0.623 0.623	0.724 0.424	2
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Nur === Deta	ary === y Classifi tly Classi atistic olute erro n squared absolute ative squa mber of Ir iled Accum	or error error ared erro nstances racy By C TP Rate 0.794 0.453 0.679	r lass === FP Rate 0.547 0.206	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740 0.528	53 15 69 79 % 64 % Recall 0.794 0.453	67.858 32.142 F-Measure 0.766 0.487	% MCC 0.257 0.257	0.623 0.623	0.724 0.424	2
=== Summa Correctly Incorrect Kappa st: Mean abso Root mean Relative Root rela Total Num ==== Deta: Weighted	ary === y Classifi tly Classifi atistic olute erro n squared absolute ative squa mber of Ir iled Accur Avg. (or error error ared erro astances racy By C FP Rate 0.794 0.679 rix ===	r lass === FP Rate 0.547 0.206 0.432	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740 0.528	53 15 69 79 % 64 % Recall 0.794 0.453	67.858 32.142 F-Measure 0.766 0.487	% MCC 0.257 0.257	0.623 0.623	0.724 0.424	2
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Num === Deta: Weighted === Confi	ary === y Classifitly Classifitly Classific olute error n squared absolute ative squa mber of Ir iled Accur Avg. 6 usion Matr	or error error ared erro astances racy By C FP Rate 0.794 0.453 0.679 rix ===	r lass === FP Rate 0.547 0.206 0.432	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740 0.528	53 15 69 79 % 64 % Recall 0.794 0.453	67.858 32.142 F-Measure 0.766 0.487	% MCC 0.257 0.257	0.623 0.623	0.724 0.424	2
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Num === Deta: Weighted === Confi	ary === y Classifi tly Classifi atistic olute erro n squared absolute ative squa mber of Ir iled Accur Avg. (usion Matr	or error error error ared erro error astances racy By C FP Rate 0.794 0.453 0.679 rix === classifie = 2	r lass === FP Rate 0.547 0.206 0.432	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740 0.528	53 15 69 79 % 64 % Recall 0.794 0.453	67.858 32.142 F-Measure 0.766 0.487	% MCC 0.257 0.257	0.623 0.623	0.724 0.424	2
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Num === Deta: Weighted === Confi	ary === y Classifi tly Classifi atistic olute erro n squared absolute ative squa mber of Ir iled Accur Avg. (usion Matr	or error error ared erro astances racy By C FP Rate 0.794 0.453 0.679 rix ===	r lass === FP Rate 0.547 0.206 0.432	1304 0.25 0.32 0.56 71.88 119.88 4057 Precision 0.740 0.528	53 15 69 79 % 64 % Recall 0.794 0.453	67.858 32.142 F-Measure 0.766 0.487	% MCC 0.257 0.257	0.623 0.623	0.724 0.424	2



ClassifierAttributeEva

Test 1 Attributes Selected									
Attributes Selected	Attribute Eval	uator	Search M	ethod					
	ClassifierAttr	ibuteEval	Ranker						
Classifier Method	NaiveBayes								
Liassifier Metriou	ivalvebayes								
=== Summary ==	=								
Correctly Clas	sified Inst	ances	2880		70.9884	%			
Incorrectly Cl			1177		29.0116				
Kappa statisti		stances		063	25.0110	-0			
			0.3						
Mean absolute			0.2						
Root mean squa			0.5						
Relative absol				719 %					
Root relative		or	108.5	12 %					
Total Number o	of Instances		4057						
=== Detailed A	Accuracy By	Class ===							
	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	0.703	0.278	0.833	0.703	0.763	0.406	0.776	0.859	2
	0.722	0.297	0.554	0.722	0.627	0.406	0.776	0.591	1
Weighted Avg.	0.710	0.284	0.739	0.722	0.717	0.406	0.776	0.769	1
mergined Avg.	0.710	0.204	0.755	0.710	0.717	0.400	0.770	0.705	
=== Confusion	Matrix ===								
	< classifi	ed as							
1891 797	a = 2								
380 989	b = 1								
			<u> </u>	1			 		
	Search Method								
ributes Se ClassifierAtt F	Ranker								
				0					
ssifier Me Logistic									
=== Evaluation o	n tost set								
Evaluation C	ni test set								
Time taken to te				. 0 10 -					
	est model or	supplie	a test set	: 0.16 S					
Talle taken to te					conds				
-					conds				
=== Summary ===					conus				
=== Summary ===					conus				
-		ices	3055		75.3019	%			
=== Summary === Correctly Classi	ified Instan		3055 1002						
=== Summary === Correctly Classi Incorrectly Clas	ified Instan		1002	169	75.3019				
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic	ified Instan ssified Inst		1002 0.41		75.3019				
Summary Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er	ified Instan ssified Inst		1002 0.41 0.32	203	75.3019				
Summary Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square	ified Instan ssified Inst ror ed error		1002 0.41 0.32 0.40	203 088	75.3019				
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut	ified Instan ssified Inst rror ed error ee error	ances	1002 0.41 0.32	203 088	75.3019				
Summary Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square	ified Instan ssified Inst rror ed error ee error	ances	1002 0.41 0.32 0.40	203 088 345 %	75.3019				
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut	ified Instan ssified Inst rror ed error e error quared error	ances	1002 0.41 0.32 0.40 71.63	203 088 345 %	75.3019				
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut Root relative so	ified Instan ssified Inst rror ed error ee error quared error Instances	ances	1002 0.41 0.32 0.40 71.63 86.46	203 088 345 %	75.3019				
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut Root relative sc Total Number of	ified Instantsified Inst rror de error de error quared error Instances	ances	1002 0.41 0.32 0.40 71.63 86.46 4057	203 088 845 % 605 %	75.3019 24.6981	%	DOC 4-		
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut Root relative sc Total Number of	ified Instantsified Instants Fror de error de error quared error Instances duracy By Cl	ances ass ===	1002 0.41 0.32 0.40 71.63 86.46 4057	203 188 1845 % 1805 %	75.3019 24.6981 F-Measure	% MCC	ROC Area		
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut Root relative sc Total Number of	ified Instantsified Instantsified Instance error quared error Instances curacy By Cl TP Rate F	ass === P Rate	1002 0.41 0.32 0.40 71.63 86.46 4057	203 088 045 % 505 % Recall 0.868	75.3019 24.6981 F-Measure 0.823	% MCC 0.423	0.804	0.880	2
=== Summary === Correctly Classi Incorrectly Classi Kappa statistic Mean absolute er Root mean square Relative absolut Root relative so Total Number of	ified Instantsified Instantsified Instance error quared error Instances curacy By Cl TP Rate F	ass === P Rate	1002 0.41 0.32 0.40 71.63 86.46 4057	203 188 1845 % 1805 %	75.3019 24.6981 F-Measure	% MCC			
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut Root relative sc Total Number of	ified Instantsified Instantsified Instantsified Instantsified Error quared error Instances Euracy By Cl TP Rate F 0.868 0	ass === P Rate 0.473	1002 0.41 0.32 0.40 71.63 86.46 4057	203 088 045 % 505 % Recall 0.868	75.3019 24.6981 F-Measure 0.823	% MCC 0.423	0.804	0.880	2
=== Summary === Correctly Classi Incorrectly Clas Kappa statistic Mean absolute er Root mean square Relative absolut Root relative so Total Number of === Detailed Acc Weighted Avg.	ified Instantsified Instantsified Instance error quared error Instances TP Rate F 0.868 0 0.753 0	ass === P Rate 0.473	1002 0.41 0.32 0.40 71.63 86.46 4057 Precision 0.783 0.671	203 088 845 % 605 % Recall 0.868 0.527	75.3019 24.6981 F-Measure 0.823 0.590	% MCC 0.423 0.423	0.804 0.804	0.880 0.655	2
=== Summary === Correctly Classi Incorrectly Classi Incorrectly Classi Kappa statistic Mean absolute er Root mean square Relative absolut Root relative so Total Number of === Detailed Accord Weighted Avg. === Confusion Ma	ified Instantsified Instantsified Instance error eventuared error Instances Euracy By Cl TP Rate F 0.868 0 0.527 0 0.753 0 etrix ===	ass === FP Rate 0.473 0.132 0.358	1002 0.41 0.32 0.40 71.63 86.46 4057 Precision 0.783 0.671	203 088 845 % 605 % Recall 0.868 0.527	75.3019 24.6981 F-Measure 0.823 0.590	% MCC 0.423 0.423	0.804 0.804	0.880 0.655	2
=== Summary === Correctly Classi Incorrectly Class Kappa statistic Mean absolute er Root mean square Relative absolut Root relative so Total Number of === Detailed Accord Weighted Avg. === Confusion Ma a b <	ified Instantsified Instantsified Instance error ender error	ass === FP Rate 0.473 0.132 0.358	1002 0.41 0.32 0.40 71.63 86.46 4057 Precision 0.783 0.671	203 088 845 % 605 % Recall 0.868 0.527	75.3019 24.6981 F-Measure 0.823 0.590	% MCC 0.423 0.423	0.804 0.804	0.880 0.655	2
=== Summary === Correctly Classi Incorrectly Class Incorrectly Class Kappa statistic Mean absolute er Root mean square Relative absolut Root relative so Total Number of === Detailed Acc Weighted Avg. === Confusion Ma a b < 2334 354	ified Instantsified Instantsified Instants error ele error quared error Instances TP Rate F 0.868 0 0.527 0 0.753 0 0 0.753 0 0 0.753 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ass === FP Rate 0.473 0.132 0.358	1002 0.41 0.32 0.40 71.63 86.46 4057 Precision 0.783 0.671	203 088 845 % 605 % Recall 0.868 0.527	75.3019 24.6981 F-Measure 0.823 0.590	% MCC 0.423 0.423	0.804 0.804	0.880 0.655	2
=== Summary === Correctly Classi Incorrectly Class Incorrectly Class Kappa statistic Mean absolute er Root mean square Relative absolut Root relative so Total Number of === Detailed Accord Weighted Avg. === Confusion Ma a b <	ified Instantsified Instantsified Instance error ender error	ass === FP Rate 0.473 0.132 0.358	1002 0.41 0.32 0.40 71.63 86.46 4057 Precision 0.783 0.671	203 088 845 % 605 % Recall 0.868 0.527	75.3019 24.6981 F-Measure 0.823 0.590	% MCC 0.423 0.423	0.804 0.804	0.880 0.655	2

tti ibates se c	lassifierAtt	Ranker								
Classifier Me R	andomFores	t								
=== Summa	rv ===		'	'		'	,	,	'	
		T		2044		75 0300	0-			
Correctly Incorrect Kappa sta Mean abso Root mean Relative a Root rela Total Num	ly Classi tistic lute erro squared absolute tive squa	fied In r error error red err	stances or	3044 1013 0.39 0.35 0.41 79.11 86.79 4057	38 04 57 %	75.0308 24.9692				
=== Detai	led Accur	acy By	Class ===							
Weighted /	0 0	P Rate .897 .463 .750	FP Rate 0.537 0.103 0.391	Precision 0.766 0.695 0.742	Recall 0.897 0.463 0.750	F-Measure 0.826 0.556 0.735	MCC 0.407 0.407 0.407	ROC Area 0.806 0.806 0.806	PRC Area 0.886 0.667 0.813	Clas 2 1
=== Confu	sion Matr	ix ===								
a l 2410 278 735 634	8 a	lassifi = 2 = 1	ed as							
	tribute Eva S		hod							
	10 411 0									
ttributes Se Cl	assifierAtt <mark></mark> R	lanker								
		tanker								
		tanker								
		tanker								
assifier Me Ra	andomTree	tanker								
assifier Me Ra	nry ===									
assifier Me Ra	ry === / Classif: ly Class: tistic lute erro squared absolute tive square	ied Ins ified I or error error ared er	nstances	0.3 0.5 78.6	206 515 631 136 % 905 %	65.7875 34.2125				
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela	rry === / Classif: ly Class: tistic blute error absolute ative squared tive squared absolute	ied Ins ified I or error error ared er nstance	nstances ror	1388 0.2 0.3 0.5 78.6 119.0 4057	515 631 136 %					
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Num	ry === / Classif: ly Class: tistic plute erro squared absolute stive squa ber of In	ied Ins ified I or error error ared er nstance racy By	ror s Class ==	1388 0.2 0.3 0.5 78.6 119.0 4057	515 631 136 % 905 %	34.2125	5 %	0.619 0.619	a PRC Are 0.728 0.424 0.625	ea Cl 2 1
=== Summa Correctly Incorrect Kappa sta Mean abso Root mean Relative Root rela Total Num === Detai	rry === / Classif: ly Class: stistic blute error a squared absolute stive squa ber of In led Accur Avg.	ied Insified Insormerror error erocy By TP Rate 0.761 0.456 0.658	ror S Class == FP Rate 0.544 0.239 0.441	1388 0.2 0.3 0.5 78.6 119.0 4057 = Precision 0.733 0.493	515 631 136 % 905 % Recall 0.761 0.456	34.2125 F-Measure 0.747 0.473	e MCC 0.221 0.221	0.619 0.619	0.728 0.424	2

	Attribute Eve	Search Meth	od	_						
ttributes Sa	ClassifierAt		-	+						
itti ibutes se	ClassificiAt	Rankei								
laccifica Ma	IDV									
assifier Me	IBK									
=== !	Summary =	==								
		ssified In		2753		67.85				
		lassified	Instance			32.14	2 %			
	a statist				.2553					
	absolute			0	.3215					
Root	mean squ	ared erro	r	0	.5669					
Rela	tive abso	lute erro	r	71	.8879 %					
Root	relative	squared (error	119	.8864 %					
Tota	l Number	of Instand	ces	4057						
=== [Detailed	Accuracy (By Class	===						
		TP Rat	te FP Ra	te Precisi	on Recall	F-Measu	ire MCC	ROC Are	ea PRC Area	C.
		0.794	0.547	0.740	0.794	0.766	0.257	0.623	0.724	2
		0.453	0.206	0.528	0.453	0.487	0.257	0.623	0.424	1
Weig	hted Avg.				0.679	0.672	0.257		0.623	_
		3.0.3					3.23,			
===	Confusion	Matrix =	=							
		1								
		< class:	ified as							
213	3 555	a = 2								
749	9 620	b = 1								
		Search Meth	od							
ributes Sa	ClassifierAtt	Ranker								
in indices se										
butes se										
	OneR									
	OneR									
	OneR				0					
	OneR				0					
ssifier Me	OneR				0					
ssifier Me										
ssifier Me	OneR									
ssifier Me	nmary ===	ified Tari	ances	2005		72 5767	9.			
ssifier Me	nmary ===	ified Inst		2985		73.5765				
=== Sun	nmary === tly Class: ectly Cla:	ified Inst ssified Ir		1072		73.5765 26.4235				
=== Sun Correct Incorre	nmary === tly Class: ectly Clas statistic	ssified Ir								
=== Sun Correct Incorre	nmary === tly Class: ectly Cla:	ssified Ir		1072	21					
=== Sum Correct Incorrect Kappa s Mean ab	nmary === tly Class: ectly Clas statistic	ssified Ir rror		1072 0.3	21 642					
=== Sum Correct Incorre Kappa s Mean ab Root me	nmary === tly Class ectly Cla statistic osolute e ean square	ssified Ir rror ed error		1072 0.3 0.2 0.5	21 642 14					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ	nmary === tly Class ectly Clas statistic osolute e ean squar ve absolu	ssified Ir rror ed error te error	stances	1072 0.3 0.2 0.5 59.0	21 642 14 897 %					
=== Sum Correct Incorrect Kappa s Mean ab Root me Relativ Root re	nmary === tly Class: ectly Cla: statistic statistic to tlassic elassic elassic elassic elassic elassic elassic elassic	ssified Ir rror ed error te error quared err	stances or	1072 0.3 0.2 0.5 59.0 108.7	21 642 14 897 %					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re	nmary === tly Class: ectly Cla: statistic statistic to tlassic elassic elassic elassic elassic elassic elassic elassic	ssified Ir rror ed error te error	stances or	1072 0.3 0.2 0.5 59.0	21 642 14 897 %					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class. ectly Class statistic osolute e ean squar ve absolu elative so Number of	rror ed error te error quared err Instances	ror	1072 0.3 0.2 0.5 59.0 108.7 4057	21 642 14 897 %					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class. ectly Class statistic osolute e ean squar ve absolu elative so Number of	rror ed error te error quared err Instances	ror	1072 0.3 0.2 0.5 59.0 108.7 4057	21 642 14 897 %					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class. ectly Class statistic osolute e ean squar ve absolu elative so Number of	ssified Ir rror ed error te error quared err	ror	1072 0.3 0.2 0.5 59.0 108.7 4057	21 642 14 897 %					
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class. ectly Class statistic osolute e ean squar ve absolu elative so Number of	rror ed error te error quared err Instances curacy By	ror	1072 0.3: 0.2: 0.5: 59.0: 108.7: 4057	21 642 14 897 % 135 %	26.4235	i %	ROC Area	PRC Area	Cla
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class. ectly Class statistic osolute e ean squar ve absolu elative so Number of	rror ed error te error quared err Instances curacy By	ror Class ===	1072 0.3 0.2 0.5 59.0 108.7 4057	21 642 14 897 % 135 %	26.4235 F-Measure	: %			
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class. ectly Class statistic osolute e ean squar ve absolu elative so Number of	rror ed error te error quared err Instances curacy By TP Rate 0.935	Class ==: FP Rate 0.656	1072 0.3: 0.2: 0.5: 59.0: 108.7: 4057 = Precision 0.737	21 642 14 897 % 135 %	26.4235 F-Measure 0.824	. MCC 0.361	0.640	0.732	2
=== Sum Correct Incorrect Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class ectly Cla statistic ossolute e ean squar ve absolu elative so Number of	rror ed error te error quared err Instances curacy By TP Rate 0.935 0.344	Class ===: FP Rate 0.656 0.065	1072 0.33 0.21 0.55 59.01 108.73 4057 = Precision 0.737 0.730	21 642 14 897 % 135 % Recall 0.935 0.344	26.4235 F-Measure 0.824 0.468	e MCC 0.361 0.361	0.640 0.640	0.732 0.473	
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N	nmary === tly Class ectly Cla statistic ossolute e ean squar ve absolu elative so Number of	rror ed error te error quared err Instances curacy By TP Rate 0.935	Class ==: FP Rate 0.656	1072 0.3: 0.2: 0.5: 59.0: 108.7: 4057 = Precision 0.737	21 642 14 897 % 135 %	26.4235 F-Measure 0.824	. MCC 0.361	0.640	0.732	2
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N === Det	nmary === tly Class ectly Clas statistic statistic ean square we absolu elative so Number of tailed Acce ed Avg.	rror ed error te error quared err Instances curacy By TP Rate 0.935 0.344 0.736	Class ===: FP Rate 0.656 0.065	1072 0.33 0.21 0.55 59.01 108.73 4057 = Precision 0.737 0.730	21 642 14 897 % 135 % Recall 0.935 0.344	26.4235 F-Measure 0.824 0.468	e MCC 0.361 0.361	0.640 0.640	0.732 0.473	2
=== Sum Correct Incorre Kappa s Mean ab Root me Relativ Root re Total N === Det	nmary === tly Class ectly Clas statistic statistic ean square we absolu elative so Number of tailed Acce ed Avg.	rror ed error te error quared err Instances curacy By TP Rate 0.935 0.344	Class ===: FP Rate 0.656 0.065	1072 0.33 0.21 0.55 59.01 108.73 4057 = Precision 0.737 0.730	21 642 14 897 % 135 % Recall 0.935 0.344	26.4235 F-Measure 0.824 0.468	e MCC 0.361 0.361	0.640 0.640	0.732 0.473	2
=== Sum Correct Incorre Kappa ss Mean ab Root me Relativ Root re Total N	nmary === tly Class ectly Clas statistic cosolute e ectly essolute eve absolute elative so Number of tailed Acc ed Avg. enfusion Ma	rror ed error te error quared err Instances curacy By TP Rate 0.935 0.344 0.736 atrix ===	FP Rate 0.656 0.065 0.456	1072 0.33 0.21 0.55 59.01 108.73 4057 = Precision 0.737 0.730	21 642 14 897 % 135 % Recall 0.935 0.344	26.4235 F-Measure 0.824 0.468	e MCC 0.361 0.361	0.640 0.640	0.732 0.473	2
=== Sum Correct Incorre Kappa ss Mean ab Root me Relativ Root re Total N	nmary === tly Class ectly Clas statistic cosolute e ectly essolute eve absolute elative so Number of tailed Acc ed Avg. enfusion Ma	rror ed error te error quared err Instances curacy By TP Rate 0.935 0.344 0.736	FP Rate 0.656 0.065 0.456	1072 0.33 0.21 0.55 59.01 108.73 4057 = Precision 0.737 0.730	21 642 14 897 % 135 % Recall 0.935 0.344	26.4235 F-Measure 0.824 0.468	e MCC 0.361 0.361	0.640 0.640	0.732 0.473	2
=== Sum Correct Incorrect Kappa s Mean ab Root me Relativ Root re Total N === Det	nmary === tly Class ectly Clas statistic solute e ean square ve absolur elative so Number of tailed Acc ed Avg. nfusion Ma	rror ed error te error quared err Instances curacy By TP Rate 0.935 0.344 0.736 atrix ===	FP Rate 0.656 0.065 0.456	1072 0.33 0.21 0.55 59.01 108.73 4057 = Precision 0.737 0.730	21 642 14 897 % 135 % Recall 0.935 0.344	26.4235 F-Measure 0.824 0.468	e MCC 0.361 0.361	0.640 0.640	0.732 0.473	2
=== Sum Correct Incorrect Incorrect Kappa s Mean ab Root me Relativ Root re Total N === Det Weighte === Cor	nmary === tly Class ectly Clas statistic solute e ean square ve absolur elative so Number of tailed Acc ed Avg. nfusion Ma	rror ed error te error quared err Instances curacy By TP Rate 0.935 0.344 0.736 atrix ===	FP Rate 0.656 0.065 0.456	1072 0.33 0.21 0.55 59.01 108.73 4057 = Precision 0.737 0.730	21 642 14 897 % 135 % Recall 0.935 0.344	26.4235 F-Measure 0.824 0.468	e MCC 0.361 0.361	0.640 0.640	0.732 0.473	2

Class	ifier feature evaluator					
Using	Wrapper Subset Evaluator					
Learn	ning scheme: weka.classifiers.rules.ZeroR					
Scher	Scheme options:					
Subse	et evaluation: classification accuracy					
Num	ber of folds for accuracy estimation: 5					
	Selected attributes:					
	107,34,36,37,38,35,33,27,32,					
	29,30,31,39,40,41,42,49,50,5					
	1,48,47,46,43,44,45,28,26,53,					
	7,9,10,11,8,6,25,5,2,3,4,12,13					
	,14,15,22,23,24,21,20,19,16,1					
	7,18,52,54,106,88,90,91,92,8					
	9,87,81,86,83,84,85,93,94,95,					
	96,103,104,105,102,101,100,					
	97,98,99,82,80,55,61,63,64,6					
	5,62,60,79,59,56,57,58,66,67,					
	68,69,76,77,78,75,74,73,70,7					
	1,72,1:107					