

Confusion Matrices and Performance Measures

Evaluate Techniques for Wifi Locationing

XTOL Data Analytics and Big Data program

Module 3, Task 3

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KNN

Building-only classifier

Confusion Matrix

	Reference		
Prediction	0	1	2
0	532	1	0
1	230	4	1
2	2	2	267

Overall Statistics

Accuracy Kappa
0.9927993 0.9886307

Accuracy : 0.9928
95% CI : (0.9859, 0.9969)
No Information Rate : 0.4824
P-Value [Acc > NIR] : <2e-16

Kappa : 0.9886

McNemar's Test P-Value : 0.4459

Statistics by Class:

	Class: 0	Class: 1	Class: 2
Sensitivity	0.9925	0.9902	0.9963
Specificity	0.9983	0.9963	0.9953
Pos Pred Value	0.9981	0.9902	0.9852
Neg Pred Value	0.9931	0.9963	0.9988
Prevalence	0.4824	0.2763	0.2412
Detection Rate	0.4788	0.2736	0.2403
Detection Prevalence	0.4797	0.2763	0.2439
Balanced Accuracy	0.9954	0.9932	0.9958

Building and Floor classifier

Format of predicted classes: BuildingID | FloorNumber

Confusion Matrix

[illegible]

Overall Statistics

Accuracy Kappa
0.6984698 0.6645994

Accuracy : 0.6985
95% CI : (0.6705, 0.7254)
No Information Rate : 0.1872
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.6646

McNemar's Test P-Value : NA

Random Forest

Building-only classifier

Confusion Matrix

Reference			
Prediction	0	1	2
0	536	0	0
1	0	307	1
2	0	0	267

Overall Statistics

Accuracy Kappa
0.9990999 0.9985773

Accuracy : 0.9991
95% CI : (0.995, 1)
No Information Rate : 0.4824
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.9986

McNemar's Test P-Value : NA

Statistics by Class:

	Class: 0	Class: 1	Class: 2
Sensitivity	1.0000	1.0000	0.9963
Specificity	1.0000	0.9988	1.0000
Pos Pred Value	1.0000	0.9968	1.0000
Neg Pred Value	1.0000	1.0000	0.9988
Prevalence	0.4824	0.2763	0.2412
Detection Rate	0.4824	0.2763	0.2403
Detection Prevalence	0.4824	0.2772	0.2403
Balanced Accuracy	1.0000	0.9994	0.9981

Building and Floor classifier

Confusion Matrix

Reference														
Prediction	0 0	0 1	0 2	0 3	1 0	1 1	1 2	1 3	2 0	2 1	2 2	2 3	2 4	
0 0	38	18	0	0	0	0	0	0	0	0	0	0	0	
0 1	28	118	8	1	0	0	0	0	0	0	0	0	0	
0 2	12	69	143	40	0	0	0	0	0	0	1	0	0	
0 3	0	3	14	44	0	0	0	0	0	0	0	0	0	
1 0	0	0	0	0	15	2	0	0	0	0	0	0	0	
1 1	0	0	0	0	9	93	1	0	0	0	0	0	0	
1 2	0	0	0	0	6	47	80	8	0	0	0	0	0	
1 3	0	0	0	0	0	1	6	39	0	0	0	0	0	
2 0	0	0	0	0	0	0	0	0	16	2	0	0	0	
2 1	0	0	0	0	0	0	0	0	8	108	19	1	1	
2 2	0	0	0	0	0	0	0	0	0	1	17	0	0	
2 3	0	0	0	0	0	0	0	0	0	0	17	39	21	
2 4	0	0	0	0	0	0	0	0	0	0	0	0	17	

Overall Statistics

Accuracy Kappa
0.6903690 0.6521745

Accuracy : 0.6904
95% CI : (0.6623, 0.7175)
No Information Rate : 0.1872
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.6522

McNemar's Test P-Value : NA

C5.0

Building-only classifier

Confusion Matrix

Reference			
Prediction	0	1	2
0	533	0	0
1	0	307	0
2	3	0	268

Overall Statistics

Accuracy Kappa
0.9972997 0.9957365

Accuracy : 0.9973
95% CI : (0.9921, 0.9994)
No Information Rate : 0.4824
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.9957

McNemar's Test P-Value : NA

Statistics by Class:

	Class: 0	Class: 1	Class: 2
Sensitivity	0.9944	1.0000	1.0000
Specificity	1.0000	1.0000	0.9964
Pos Pred Value	1.0000	1.0000	0.9889
Neg Pred Value	0.9948	1.0000	1.0000
Prevalence	0.4824	0.2763	0.2412
Detection Rate	0.4797	0.2763	0.2412
Detection Prevalence	0.4797	0.2763	0.2439
Balanced Accuracy	0.9972	1.0000	0.9982

Building and Floor classifier

Confusion Matrix

Reference														
Prediction	0 0	0 1	0 2	0 3	1 0	1 1	1 2	1 3	2 0	2 1	2 2	2 3	2 4	
0 0	41	22	4	1	0	0	0	0	0	0	0	0	0	
0 1	24	115	6	0	0	0	0	0	0	0	0	0	0	
0 2	8	50	111	19	0	0	0	0	0	0	0	0	0	
0 3	5	19	44	65	0	0	0	0	0	0	0	0	0	
1 0	0	0	0	0	16	4	0	0	0	0	0	0	0	
1 1	0	1	0	0	9	90	1	0	0	0	0	0	0	
1 2	0	0	0	0	5	48	76	11	0	0	0	0	0	
1 3	0	0	0	0	0	1	10	36	0	0	0	0	0	
2 0	0	0	0	0	0	0	0	0	11	1	0	0	1	
2 1	0	1	0	0	0	0	0	0	13	108	24	1	0	
2 2	0	0	0	0	0	0	0	0	0	2	14	0	0	
2 3	0	0	0	0	0	0	0	0	0	0	15	32	12	
2 4	0	0	0	0	0	0	0	0	0	0	1	7	26	

Overall Statistics

Accuracy Kappa

0.6669667 0.6283008

Accuracy : 0.667
95% CI : (0.6384, 0.6947)
No Information Rate : 0.1872
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.6283

Mcnemar's Test P-Value : NA

