

LAPORAN PRAKTIKUM MATA KULIAH PEMBELAJARAN MESIN

EVALUATION METHOD



Anggota:

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**PROGRAM STUDI S1
INFORMATIKA**

**FAKULTAS INFORMATIKA DAN TEKNIK ELEKTRO
INSTITUT TEKNOLOGI DEL**

Pembagian Tugas

Nama	Tugas
David Gurning	Fold - 4 CV
Tesalonika Aprisda Sitopu	Fold - 1 CV
Gabriel Hutagalung	Fold - 2 CV
Dedi Panggabean	Fold - 3 CV

I. Tabel Dataset

ID	Study Time	Free Time	Go Out	Absences	Graduation	Pembagian
1	2	3	4	6	fail	Tesa
2	3	2	2	4	pass	
3	2	4	1	0	pass	
4	2	3	3	0	fail	
5	2	3	3	4	fail	Gabriel
6	2	5	1	0	pass	
7	3	2	3	6	pass	
8	2	4	3	2	fail	
9	2	3	2	10	fail	Dedi
10	2	2	2	0	pass	
11	1	4	4	4	pass	
12	2	3	2	4	fail	
13	2	3	2	4	fail	David
14	2	4	2	10	pass	
15	3	5	2	0	pass	
16	1	5	5	16	fail	
17	2	4	4	0	fail	Test Set
18	3	2	2	2	pass	
19	1	3	3	2	pass	
20	2	1	4	6	fail	

II. Tabel max & min per atribut

Max Study Time	3
Min Study Time	1
Max - Min	2
Mean	2,0625

Max Free Time	5
Min Free Time	2
Max - Min	3
Mean	3,4375

Max Go Out	5
Min Go Out	1
Max - Min	4
Mean	2,5625

Max Absences	16
Min Absences	0
Max - Min	16
Mean	4,375

III. Tabel After Normalization

- Fold 1

	After Normalization			
ID	Study Time	Free Time	Go Out	Absences
5	-0,03125	-0,1458333333	0,109375	-0,0234375
6	-0,03125	0,5208333333	-0,390625	-0,2734375
7	0,46875	-0,4791666667	0,109375	0,1015625
8	-0,03125	0,1875	0,109375	-0,1484375
9	-0,03125	-0,1458333333	-0,140625	0,3515625
10	-0,03125	-0,4791666667	-0,140625	-0,2734375
11	-0,53125	0,1875	0,359375	-0,0234375
12	-0,03125	-0,1458333333	-0,140625	-0,0234375
13	-0,03125	-0,1458333333	-0,140625	-0,0234375
14	-0,03125	0,1875	-0,140625	0,3515625
15	0,46875	0,5208333333	-0,140625	-0,2734375
16	-0,53125	0,5208333333	0,609375	0,7265625
1	-0,03125	-0,1458333333	0,359375	0,1015625
2	0,46875	-0,4791666667	-0,140625	-0,0234375
3	-0,03125	0,1875	-0,390625	-0,2734375
4	-0,03125	-0,1458333333	0,109375	-0,2734375

- **Fold 2**

After Normalization				
ID	Study Time	Free Time	Go Out	Absences
1	-0,03125	-0,1458333333	0,359375	0,1015625
2	0,46875	-0,4791666667	-0,140625	-0,0234375
3	-0,03125	0,1875	-0,390625	-0,2734375
4	-0,03125	-0,1458333333	0,109375	-0,2734375
9	-0,03125	-0,1458333333	-0,140625	0,3515625
10	-0,03125	-0,4791666667	-0,140625	-0,2734375
11	-0,53125	0,1875	0,359375	-0,0234375
12	-0,03125	-0,1458333333	-0,140625	-0,0234375
13	-0,03125	-0,1458333333	-0,140625	-0,0234375
14	-0,03125	0,1875	-0,140625	0,3515625
15	0,46875	0,5208333333	-0,140625	-0,2734375
16	-0,53125	0,5208333333	0,609375	0,7265625
5	-0,03125	-0,1458333333	0,109375	-0,0234375
6	-0,03125	0,5208333333	-0,390625	-0,2734375
7	0,46875	-0,4791666667	0,109375	0,1015625
8	-0,03125	0,1875	0,109375	-0,1484375

- **Fold 3**

After Normalization				
ID	Study Time	Free Time	Go Out	Absences
1	-0,03125	-0,1458333333	0,359375	0,1015625
2	0,46875	-0,4791666667	-0,140625	-0,0234375
3	-0,03125	0,1875	-0,390625	-0,2734375
4	-0,03125	-0,1458333333	0,109375	-0,2734375
5	-0,03125	-0,1458333333	0,109375	-0,0234375
6	-0,03125	0,5208333333	-0,390625	-0,2734375
7	0,46875	-0,4791666667	0,109375	0,1015625
8	-0,03125	0,1875	0,109375	-0,1484375
13	-0,03125	-0,1458333333	-0,140625	-0,0234375
14	-0,03125	0,1875	-0,140625	0,3515625
15	0,46875	0,5208333333	-0,140625	-0,2734375
16	-0,53125	0,5208333333	0,609375	0,7265625
9	-0,03125	-0,1458333333	-0,140625	0,3515625

10	-0,03125	-0,4791666667	-0,140625	-0,2734375
11	-0,53125	0,1875	0,359375	-0,0234375
12	-0,03125	-0,1458333333	-0,140625	-0,0234375

- **Fold 4**

After Normalization				
ID	Study Time	Free Time	Go Out	Absences
1	-0,03125	-0,14583	0,359375	0,101563
2	0,46875	-0,47917	-0,14063	-0,02344
3	-0,03125	0,1875	-0,39063	-0,27344
4	-0,03125	-0,14583	0,109375	-0,27344
5	-0,03125	-0,14583	0,109375	-0,02344
6	-0,03125	0,520833	-0,39063	-0,27344
7	0,46875	-0,47917	0,109375	0,101563
8	-0,03125	0,1875	0,109375	-0,14844
9	-0,03125	-0,14583	-0,14063	0,351563
10	-0,03125	-0,47917	-0,14063	-0,27344
11	-0,53125	0,1875	0,359375	-0,02344
12	-0,03125	-0,14583	-0,14063	-0,02344
13	-0,03125	-0,14583	-0,14063	-0,02344
14	-0,03125	0,1875	-0,14063	0,351563
15	0,46875	0,520833	-0,14063	-0,27344
16	-0,53125	0,520833	0,609375	0,726563

IV. Perhitungan KNN Tiap Fold dengan K = 5

❖ Fold 1

KNN (K=5)					
Distance to ID	Graduation	1	2	3	4
5	fail	0,279508497 2	0,6508541397	0,650854139 7	0,25
6	pass	1,071246678	1,17260394	0,333333333 3	0,833333333 3
7	pass	0,650854139 7	0,2795084972	1,041666667	0,708333333 3
8	fail	0,485912657 9	0,8789592962	0,515388203 2	0,356000156 1
9	fail	0,559016994 4	0,7083333333	0,751156515 7	0,673145600 9
10	pass	0,708333333 3	0,5590169944	0,712000312 1	0,416666666 7
11	pass	0,613788327 6	1,301708279	0,935414346 7	0,697216688 8
12	fail	0,515388203 2	0,6009252126	0,485912657 9	0,353553390 6
13	fail	0,515388203 2	0,6009252126	0,485912657 9	0,353553390 6
14	pass	0,650854139 7	0,9138213416	0,673145600 9	0,751156515 7
15	pass	1,041666667	1,030776406	0,650854139 7	0,870025542 4
16	fail	1,071246678	1,767766953	1,536590743	1,394433378

Perbandingan dari nilai asli dengan hasil prediksi

ID	Target	Prediction
1	fail	fail
2	pass	fail
3	pass	fail
4	fail	fail

Koefisien Matriks

Target	Prediction	
	pass	fail
pass	0	2
fail	0	2

Classification Accuracy	0,5
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❖ Fold 2

KNN (K=5)					
Distance to ID	Graduation	5	6	7	8
1	fail	0,2795084972	1,071246678	0,6508541397	0,4859126579
2	pass	0,6508541397	1,17260394	0,2795084972	0,8789592962
3	pass	0,6508541397	0,3333333333	1,041666667	0,5153882032
4	fail	0,25	0,8333333333	0,7083333333	0,3560001561
9	fail	0,4506939094	0,9474014167	0,6972166888	0,6508541397
10	pass	0,4859126579	1,030776406	0,6731456009	0,7228896489
11	pass	0,6508541397	0,993031274	1,233924408	0,5728219619
12	fail	0,25	0,7546154282	0,662748905	0,4350127712
13	fail	0,25	0,7546154282	0,662748905	0,4350127712
14	pass	0,5605676686	0,7511565157	0,9052317076	0,5590169944
15	pass	0,9052317076	0,5590169944	1,096870548	0,662748905
16	fail	1,227576655	1,5	1,625	1,173343987

Perbandingan dari nilai asli dengan hasil prediksi

ID	Target	Prediction
5	fail	fail
6	pass	pass
7	pass	fail
8	fail	fail

Koefisien Matriks

Target	Prediction	
	pass	fail
pass	1	1
fail	0	2

Classification Accuracy	0,75
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❖ Fold 3

KNN (K=5)					
Distance to ID	Graduation	9	10	11	12
1	fail	0,2501220405	0,8075814332	0,7233820023	0,402703874
2	pass	0,8625454459	0,5745773753	1,207550146	0,6122450663
3	pass	1,025952434	0,6768879927	0,6688248352	0,5553717415
4	fail	0,6702833618	0,5075987798	0,664266717	0,2830886083
5	fail	0,4464076446	0,5658237546	0,6154269016	0,1328125
6	pass	1,177247523	1,006843041	0,7472869404	0,8011061756
7	pass	0,6944536675	0,7329191021	1,215610384	0,6279930503
8	fail	0,6478934297	0,7788548354	0,5322256666	0,3799674608
13	fail	0,6187677554	0,4373217023	0,6122450663	0,1171875
14	pass	0,5944406163	0,9234222244	0,6358914295	0,5152368594
15	pass	1,152092869	1,125894826	1,089653166	0,8778823125
16	fail	0,9494928802	1,740505073	1,036369997	1,287398969

Perbandingan dari nilai asli dengan hasil prediksi

ID	Target	Prediction
9	fail	fail
10	pass	fail
11	pass	fail
12	fail	fail

Koefisien Matriks

Target	Prediction	
	pass	fail
pass	0	2
fail	0	2

Classification Accuracy	0,5
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❖ Fold 4

KNN (K=5)					
Distance to ID	Graduation	13	14	15	16
1	fail	0,5153937815	0,6508562736	1,0416678	1,071244396
2	pass	0,6009289106	0,9138250045	1,030779317	1,767772044
3	pass	0,4859103713	0,6731483863	0,6508539689	1,536595877
4	fail	0,3535569261	0,7511591968	0,8700241695	1,394433776
5	fail	0,250005	0,5605699233	0,9052303881	1,227576497
6	pass	0,7546121889	0,751158864	0,5590169944	1,500005333
7	pass	0,66275471	0,9052355433	1,096875449	1,625001846
8	fail	0,4350130905	0,5590219137	0,6627506235	1,173346129
9	fail	0,375003	0,33333	1,04166612	1,182189518
10	pass	0,416672	0,9138258253	1,118036672	1,677056797
11	pass	0,7817377367	0,8003950587	1,193153757	0,8579716714
12	fail	0	0,5017331352	0,8700227328	1,348870474

Perbandingan dari nilai asli dengan hasil prediksi

ID	Target	Prediction
13	fail	fail
14	pass	fail
15	pass	fail
16	fail	fail

Koefisien Matriks

Target	Prediction	
	pass	fail
pass	0	2
fail	0	2

Classification Accuracy	0,5
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V. Overall

KNN (K=5)					
Distance to ID	Graduation	17	18	19	20
1	fail	1,520690633	1,25	1,145643924	0,5
2	pass	1,322875656	0,5	1,17260394	0,9013878189
3	pass	0,75	0,9013878189	0,9013878189	1,837117307
4	fail	0,3535533906	0,790569415	0,7071067812	1,600781059
5	fail	1,060660172	0,790569415	0,7071067812	0,75
6	pass	0,790569415	1,060660172	1	1,952562419
7	pass	1,677050983	1,030776406	1,436140662	0,6123724357
8	fail	0,5590169944	0,75	0,5590169944	1,274754878
9	fail	2,561737691	2,076655966	2,076655966	1,224744871
10	pass	0,7071067812	0,7071067812	0,790569415	1,600781059
11	pass	1,118033989	1,322875656	0,6123724357	1,030776406
12	fail	1,145643924	0,75	0,75	0,8660254038
13	fail	1,145643924	0,75	0,75	0,8660254038
14	pass	2,549509757	2,121320344	2,091650066	1,346291202
15	pass	0,75	0,9013878189	1,25	1,936491673
16	fail	4,046603514	3,791437722	3,570714214	2,75

Perbandingan dari nilai asli dengan hasil prediksi

ID	Target	Prediction
17	fail	pass
18	pass	fail
19	pass	fail
20	fail	fail

Koefisien Matriks

Target	Prediction	
	pass	fail
pass	0	2
fail	1	1

Classification Accuracy	0,25
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Kesimpulan

Distance	K	Fold	Confusion Matrix				Classification Accuracy
Euclidean	5	1			Prediction		50%
					pass	fail	
			Target	pass	0	2	
				fail	0	2	
Euclidean	5	2			Prediction		75%
					pass	fail	
			Target	pass	1	1	
				fail	0	2	
Euclidean	5	3			Prediction		50%
					pass	fail	
			Target	pass	0	2	
				fail	0	2	
Euclidean	5	4			Prediction		50%
					pass	fail	
			Target	pass	0	2	
				fail	0	2	
Euclidean	5	Overall			Prediction		25%
					pass	fail	
			Target	pass	0	2	
				fail	1	1	