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LAMPIRAN



Lampiran 1. Confusion Matrix SVM linear

Iterasi	C	TP	FP	FN	TN	Akurasi
1	1,0	363	118	126	499	77,94%
	1,5	364	117	130	495	77,67%
	2,5	365	116	128	497	77,94%
	5,0	363	118	130	495	77,58%
2	1,0	357	118	168	463	74,14%
	1,5	357	118	168	463	74,14%
	2,5	357	118	168	463	74,14%
	5,0	357	118	168	463	74,14%
3	1,0	372	101	145	488	77,76%
	1,5	372	101	145	488	77,76%
	2,5	372	101	145	488	77,76%
	5,0	372	101	145	488	77,76%
4	1,0	365	113	136	492	77,49%
	1,5	365	113	136	492	77,49%
	2,5	365	113	136	492	77,49%
	5,0	365	113	136	492	77,49%
5	1,0	382	111	141	472	77,22%
	1,5	382	111	141	472	77,22%
	2,5	382	111	141	472	77,22%
	5,0	382	111	143	470	77,03%
6	1,0	364	139	97	505	78,64%
	1,5	368	135	105	497	78,28%
	2,5	367	136	106	496	78,10%
	5,0	368	135	105	497	78,28%
7	1,0	371	123	145	466	75,75%
	1,5	371	123	145	466	75,75%
	2,5	371	123	145	466	75,75%
	5,0	371	123	145	466	75,75%
8	1,0	365	126	128	486	77,01%
	1,5	364	127	128	486	76,92%
	2,5	365	126	128	486	77,01%
	5,0	366	125	129	485	77,01%
9	1,0	382	128	131	464	76,56%
	1,5	382	128	131	464	76,56%
	2,5	382	128	131	464	76,56%
	5,0	382	128	131	464	76,56%
10	1,0	381	119	120	485	78,37%
	1,5	381	119	120	485	78,37%



	2,5	381	119	120	485	78,37%
	5,0	381	119	120	485	78,37%

C	Akurasi
1,0	77,09%
1,5	77,01%
2,5	77,03%
5,0	77,00%



Lampiran 2. Confusion Matrix SVM kernel polynomial

degree = 1

Iterasi	degree	C	TP	FP	FN	TN	Akurasi
1	1	1,0	364	117	128	497	77,85%
		1,5	364	117	128	497	77,85%
		2,5	365	116	130	495	77,76%
		5,0	363	118	128	497	77,76%
2	1	1,0	357	118	168	463	74,14%
		1,5	357	118	168	463	74,14%
		2,5	357	118	168	463	74,14%
		5,0	357	118	168	463	74,14%
3	1	1,0	373	100	151	482	77,31%
		1,5	373	100	153	480	77,12%
		2,5	373	100	152	481	77,22%
		5,0	372	101	148	485	77,49%
4	1	1,0	367	111	138	490	77,49%
		1,5	369	109	138	490	77,67%
		2,5	368	110	139	489	77,49%
		5,0	368	110	138	490	77,58%
5	1	1,0	381	112	143	470	76,94%
		1,5	382	111	141	472	77,22%
		2,5	382	111	143	470	77,03%
		5,0	382	111	141	472	77,22%
6	1	1,0	369	134	104	498	78,46%
		1,5	369	134	104	498	78,46%
		2,5	369	134	104	498	78,46%
		5,0	368	135	104	498	78,37%
7	1	1,0	371	123	145	466	75,75%
		1,5	371	123	145	466	75,75%
		2,5	371	123	145	466	75,75%
		5,0	371	123	145	466	75,75%
8	1	1,0	366	125	128	486	77,10%
		1,5	367	124	129	485	77,10%
		2,5	367	124	128	486	77,19%
		5,0	366	125	128	486	77,10%
	1	1,0	382	128	131	464	76,56%
		1,5	382	128	131	464	76,56%
		2,5	382	128	131	464	76,56%
		5,0	382	128	131	464	76,56%



10	1	1,0	381	119	120	485	78,37%
		1,5	381	119	120	485	78,37%
		2,5	381	119	120	485	78,37%
		5,0	381	119	120	485	78,37%

degree	C	Akurasi
1	1,0	77,00%
	1,5	77,02%
	2,5	77,00%
	5,0	77,03%

degree = 3

Iterasi	degree	C	TP	FP	FN	TN	Akurasi
1	3	1,0	356	125	63	562	83,00%
		1,5	363	118	65	560	83,45%
		2,5	367	114	65	560	83,82%
		5,0	373	108	68	557	84,09%
2	3	1,0	376	99	95	536	82,46%
		1,5	384	91	96	535	83,09%
		2,5	384	91	93	538	83,36%
		5,0	377	98	84	547	83,54%
3	3	1,0	379	94	85	548	83,82%
		1,5	382	91	82	551	84,36%
		2,5	383	90	79	554	84,72%
		5,0	377	96	80	553	84,09%
4	3	1,0	378	100	90	538	82,82%
		1,5	377	101	86	542	83,09%
		2,5	381	97	92	536	82,91%
		5,0	382	96	94	534	82,82%
5	3	1,0	370	123	79	534	81,74%
		1,5	368	125	80	533	81,46%
		2,5	370	123	79	534	81,74%
		5,0	378	115	76	537	82,73%
	3	1,0	378	125	61	541	83,17%
		1,5	385	118	61	541	83,80%
		2,5	386	117	64	538	83,62%
		5,0	387	116	69	533	83,26%
	3	1,0	376	118	77	534	82,35%
		1,5	381	113	74	537	83,08%



		2,5	383	111	75	536	83,17%
		5,0	393	101	77	534	83,89%
8	3	1,0	384	107	69	545	84,07%
		1,5	389	102	66	548	84,80%
		2,5	390	101	69	545	84,62%
		5,0	393	98	70	544	84,80%
9	3	1,0	418	92	66	529	85,70%
		1,5	418	92	67	528	85,61%
		2,5	420	90	69	526	85,61%
		5,0	425	85	71	524	85,88%
10	3	1,0	382	118	67	538	83,26%
		1,5	384	116	68	537	83,35%
		2,5	394	106	75	530	83,62%
		5,0	396	104	75	530	83,80%

degree	C	Akurasi
3	1,0	83,24%
	1,5	83,61%
	2,5	83,72%
	5,0	83,89%

degree = 5

Iterasi	degree	C	TP	FP	FN	TN	Akurasi
1	5	1,0	372	109	60	565	84,72%
		1,5	375	106	65	560	84,54%
		2,5	379	102	67	558	84,72%
		5,0	381	100	67	558	84,90%
2	5	1,0	384	91	77	554	84,81%
		1,5	385	90	81	550	84,54%
		2,5	388	87	80	551	84,90%
		5,0	395	80	79	552	85,62%
3	5	1,0	389	84	79	554	85,26%
		1,5	388	85	78	555	85,26%
		2,5	392	81	81	552	85,35%
		5,0	395	78	87	546	85,08%
	5	1,0	380	98	80	548	83,91%
		1,5	380	98	77	551	84,18%
		2,5	383	95	78	550	84,36%
		5,0	395	83	84	544	84,90%



5	5	1,0	382	111	79	534	82,82%
		1,5	381	112	77	536	82,91%
		2,5	380	113	73	540	83,18%
		5,0	383	110	71	542	83,63%
6	5	1,0	380	123	65	537	82,99%
		1,5	380	123	66	536	82,90%
		2,5	385	118	68	534	83,17%
		5,0	394	109	70	532	83,80%
7	5	1,0	397	97	78	533	84,16%
		1,5	404	90	78	533	84,80%
		2,5	402	92	81	530	84,34%
		5,0	402	92	79	532	84,52%
8	5	1,0	393	98	72	542	84,62%
		1,5	397	94	70	544	85,16%
		2,5	398	93	69	545	85,34%
		5,0	396	95	74	540	84,71%
9	5	1,0	430	80	62	533	87,15%
		1,5	432	78	61	534	87,42%
		2,5	434	76	65	530	87,24%
		5,0	436	74	64	531	87,51%
10	5	1,0	397	103	62	543	85,07%
		1,5	392	108	62	543	84,62%
		2,5	394	106	57	548	85,25%
		5,0	404	96	62	543	85,70%

degree	C	Akurasi
5	1,0	84,55%
	1,5	84,63%
	2,5	84,79%
	5,0	85,04%

degree = 7

Iterasi	degree	C	TP	FP	FN	TN	Akurasi
	7	1,0	397	84	99	526	83,45%
		1,5	387	94	66	559	85,53%
		2,5	389	92	71	554	85,26%
		5,0	392	89	72	553	85,44%
	7	1,0	400	75	118	513	82,55%
		1,5	397	78	82	549	85,53%



		2,5	397	78	83	548	85,44%
		5,0	399	76	82	549	85,71%
3	7	1,0	406	67	98	535	85,08%
		1,5	396	77	86	547	85,26%
		2,5	401	72	84	549	85,90%
		5,0	400	73	83	550	85,90%
4	7	1,0	399	79	101	527	83,73%
		1,5	398	80	87	541	84,90%
		2,5	401	77	89	539	84,99%
		5,0	399	79	83	545	85,35%
5	7	1,0	391	102	98	515	81,92%
		1,5	380	113	72	541	83,27%
		2,5	384	109	70	543	83,82%
		5,0	388	105	73	540	83,91%
6	7	1,0	411	92	87	515	83,80%
		1,5	408	95	74	528	84,71%
		2,5	411	92	74	528	84,98%
		5,0	408	95	66	536	85,43%
7	7	1,0	411	83	97	514	83,71%
		1,5	400	94	80	531	84,25%
		2,5	400	94	79	532	84,34%
		5,0	405	89	79	532	84,80%
8	7	1,0	411	80	93	521	84,34%
		1,5	399	92	71	543	85,25%
		2,5	407	84	71	543	85,97%
		5,0	408	83	68	546	86,33%
9	7	1,0	445	65	94	501	85,61%
		1,5	440	70	66	529	87,69%
		2,5	444	66	69	526	87,78%
		5,0	447	63	70	525	87,96%
10	7	1,0	411	89	86	519	84,16%
		1,5	412	88	71	534	85,61%
		2,5	405	95	69	536	85,16%
		5,0	407	93	65	540	85,70%

degree	C	Akurasi
	1,0	83,84%
	1,5	85,20%
	2,5	85,36%
	5,0	85,65%



degree = 9

Iterasi	degree	C	TP	FP	FN	TN	Akurasi
1	9	1,0	390	91	71	554	85,35%
		1,5	392	89	72	553	85,44%
		2,5	393	88	70	555	85,71%
		5,0	392	89	71	554	85,53%
2	9	1,0	399	76	87	544	85,26%
		1,5	399	76	84	547	85,53%
		2,5	400	75	81	550	85,90%
		5,0	400	75	81	550	85,90%
3	9	1,0	401	72	84	549	85,90%
		1,5	401	72	84	549	85,90%
		2,5	401	72	82	551	86,08%
		5,0	401	72	82	551	86,08%
4	9	1,0	399	79	83	545	85,35%
		1,5	400	78	84	544	85,35%
		2,5	399	79	82	546	85,44%
		5,0	396	82	79	549	85,44%
5	9	1,0	389	104	73	540	84,00%
		1,5	389	104	74	539	83,91%
		2,5	386	107	73	540	83,73%
		5,0	385	108	72	541	83,73%
6	9	1,0	407	96	72	530	84,80%
		1,5	407	96	70	532	84,98%
		2,5	406	97	67	535	85,16%
		5,0	406	97	66	536	85,25%
7	9	1,0	404	90	80	531	84,62%
		1,5	405	89	79	532	84,80%
		2,5	405	89	79	532	84,80%
		5,0	404	90	76	535	84,98%
8	9	1,0	407	84	72	542	85,88%
		1,5	407	84	68	546	86,24%
		2,5	407	84	67	547	86,33%
		5,0	406	85	67	547	86,24%
9	9	1,0	445	65	71	524	87,69%
		1,5	446	64	69	526	87,96%
		2,5	447	63	69	526	88,05%
		5,0	445	65	70	525	87,78%
10	9	1,0	412	88	69	536	85,79%
		1,5	406	94	70	535	85,16%



		2,5	408	92	64	541	85,88%
		5,0	408	92	64	541	85,88%

degree	C	Akurasi
9	1,0	85,46%
	1,5	85,53%
	2,5	85,71%
	5,0	85,68%



Lampiran 3. Confusion Matrix SVM kernel RBF

gamma = 0.1

Iterasi	gamma	C	TP	FP	FN	TN	Akurasi
1	0,1	1,0	374	107	59	566	84,99%
		1,5	371	110	64	561	84,27%
		2,5	371	110	61	564	84,54%
		5,0	376	105	65	560	84,63%
2	0,1	1,0	375	100	79	552	83,82%
		1,5	378	97	78	553	84,18%
		2,5	382	93	79	552	84,45%
		5,0	381	94	82	549	84,09%
3	0,1	1,0	386	87	74	559	85,44%
		1,5	389	84	77	556	85,44%
		2,5	388	85	79	554	85,17%
		5,0	387	86	81	552	84,90%
4	0,1	1,0	376	102	80	548	83,54%
		1,5	378	100	76	552	84,09%
		2,5	381	97	77	551	84,27%
		5,0	381	97	79	549	84,09%
5	0,1	1,0	369	124	78	535	81,74%
		1,5	370	123	75	538	82,10%
		2,5	371	122	68	545	82,82%
		5,0	376	117	73	540	82,82%
6	0,1	1,0	378	125	63	539	82,99%
		1,5	379	124	62	540	83,17%
		2,5	380	123	63	539	83,17%
		5,0	378	125	63	539	82,99%
7	0,1	1,0	381	113	71	540	83,35%
		1,5	382	112	69	542	83,62%
		2,5	384	110	67	544	83,98%
		5,0	391	103	74	537	83,98%
8	0,1	1,0	388	103	65	549	84,80%
		1,5	389	102	63	551	85,07%
		2,5	388	103	67	547	84,62%
		5,0	392	99	70	544	84,71%
	0,1	1,0	423	87	64	531	86,33%
		1,5	425	85	61	534	86,79%
		2,5	423	87	57	538	86,97%
		5,0	432	78	61	534	87,42%



10	0,1	1,0	393	107	65	540	84,43%
		1,5	391	109	61	544	84,62%
		2,5	390	110	59	546	84,71%
		5,0	391	109	58	547	84,89%

gamma	C	Akurasi
0,1	1,0	84,14%
	1,5	84,33%
	2,5	84,47%
	5,0	84,45%

gamma = 0.5

Iterasi	gamma	C	TP	FP	FN	TN	Akurasi
1	0,5	1,0	389	92	67	558	85,62%
		1,5	390	91	68	557	85,62%
		2,5	392	89	67	558	85,90%
		5,0	392	89	66	559	85,99%
2	0,5	1,0	396	79	81	550	85,53%
		1,5	395	80	80	551	85,53%
		2,5	394	81	78	553	85,62%
		5,0	391	84	80	551	85,17%
3	0,5	1,0	393	80	81	552	85,44%
		1,5	394	79	81	552	85,53%
		2,5	392	81	81	552	85,35%
		5,0	392	81	77	556	85,71%
4	0,5	1,0	391	87	82	546	84,72%
		1,5	392	86	79	549	85,08%
		2,5	390	88	76	552	85,17%
		5,0	389	89	77	551	84,99%
5	0,5	1,0	380	113	70	543	83,45%
		1,5	383	110	71	542	83,63%
		2,5	380	113	70	543	83,45%
		5,0	378	115	71	542	83,18%
	0,5	1,0	396	107	66	536	84,34%
		1,5	400	103	64	538	84,89%
		2,5	401	102	64	538	84,98%



		5,0	401	102	63	539	85,07%
7	0,5	1,0	400	94	79	532	84,34%
		1,5	401	93	78	533	84,52%
		2,5	399	95	75	536	84,62%
		5,0	400	94	77	534	84,52%
8	0,5	1,0	400	91	68	546	85,61%
		1,5	402	89	68	546	85,79%
		2,5	402	89	65	549	86,06%
		5,0	401	90	65	549	85,97%
9	0,5	1,0	441	69	69	526	87,51%
		1,5	440	70	69	526	87,42%
		2,5	438	72	68	527	87,33%
		5,0	437	73	67	528	87,33%
10	0,5	1,0	404	96	68	537	85,16%
		1,5	399	101	66	539	84,89%
		2,5	397	103	66	539	84,71%
		5,0	397	103	66	539	84,71%

gamma	C	Akurasi
0,5	1,0	85,17%
	1,5	85,29%
	2,5	85,32%
	5,0	85,26%

gamma = 1.0

Iterasi	gamma	C	TP	FP	FN	TN	Akurasi
1	1,0	1,0	386	95	63	562	85,71%
		1,5	386	95	63	562	85,71%
		2,5	386	95	63	562	85,71%
		5,0	386	95	63	562	85,71%
2	1,0	1,0	388	87	81	550	84,81%
		1,5	385	90	79	552	84,72%
		2,5	385	90	79	552	84,72%
		5,0	385	90	79	552	84,72%
3	1,0	1,0	382	91	78	555	84,72%
		1,5	382	91	78	555	84,72%



		2,5	382	91	78	555	84,72%
		5,0	382	91	78	555	84,72%
4	1,0	1,0	379	99	77	551	84,09%
		1,5	378	100	76	552	84,09%
		2,5	378	100	76	552	84,09%
		5,0	378	100	76	552	84,09%
5	1,0	1,0	368	125	72	541	82,19%
		1,5	367	126	72	541	82,10%
		2,5	367	126	72	541	82,10%
		5,0	367	126	72	541	82,10%
6	1,0	1,0	389	114	63	539	83,98%
		1,5	391	112	63	539	84,16%
		2,5	391	112	63	539	84,16%
		5,0	391	112	63	539	84,16%
7	1,0	1,0	387	107	72	539	83,80%
		1,5	389	105	75	536	83,71%
		2,5	388	106	75	536	83,62%
		5,0	388	106	75	536	83,62%
8	1,0	1,0	391	100	67	547	84,89%
		1,5	392	99	67	547	84,98%
		2,5	393	98	67	547	85,07%
		5,0	393	98	67	547	85,07%
9	1,0	1,0	422	88	68	527	85,88%
		1,5	421	89	69	526	85,70%
		2,5	421	89	69	526	85,70%
		5,0	421	89	69	526	85,70%
10	1,0	1,0	383	117	64	541	83,62%
		1,5	383	117	65	540	83,53%
		2,5	383	117	65	540	83,53%
		5,0	383	117	65	540	83,53%

gamma	C	Akurasi
1,0	1,0	84,37%
	1,5	84,34%
	2,5	84,34%
	5,0	84,34%



gamma = 1.5

Iterasi	gamma	C	TP	FP	FN	TN	Akurasi
1	1,5	1,0	385	96	62	563	85,71%
		1,5	386	95	63	562	85,71%
		2,5	386	95	63	562	85,71%
		5,0	386	95	63	562	85,71%
2	1,5	1,0	381	94	79	552	84,36%
		1,5	381	94	79	552	84,36%
		2,5	381	94	79	552	84,36%
		5,0	381	94	79	552	84,36%
3	1,5	1,0	377	96	77	556	84,36%
		1,5	379	94	77	556	84,54%
		2,5	379	94	77	556	84,54%
		5,0	379	94	77	556	84,54%
4	1,5	1,0	378	100	78	550	83,91%
		1,5	378	100	78	550	83,91%
		2,5	378	100	78	550	83,91%
		5,0	378	100	78	550	83,91%
5	1,5	1,0	363	130	70	543	81,92%
		1,5	365	128	70	543	82,10%
		2,5	365	128	70	543	82,10%
		5,0	365	128	70	543	82,10%
6	1,5	1,0	388	115	62	540	83,98%
		1,5	388	115	62	540	83,98%
		2,5	388	115	62	540	83,98%
		5,0	388	115	62	540	83,98%
7	1,5	1,0	388	106	74	537	83,71%
		1,5	387	107	74	537	83,62%
		2,5	387	107	74	537	83,62%
		5,0	387	107	74	537	83,62%
8	1,5	1,0	390	101	65	549	84,98%
		1,5	391	100	65	549	85,07%
		2,5	391	100	65	549	85,07%
		5,0	391	100	65	549	85,07%
	1,5	1,0	416	94	67	528	85,43%
		1,5	417	93	67	528	85,52%
		2,5	417	93	67	528	85,52%
		5,0	417	93	67	528	85,52%
	1,5	1,0	381	119	64	541	83,44%



		1,5	380	120	65	540	83,26%
		2,5	380	120	65	540	83,26%
		5,0	380	120	65	540	83,26%

gamma	C	Akurasi
1,5	1,0	84,18%
	1,5	84,21%
	2,5	84,21%
	5,0	84,21%

gamma = 2.0

Iterasi	gamma	C	TP	FP	FN	TN	Akurasi
1	2,0	1,0	382	99	62	563	85,44%
		1,5	382	99	62	563	85,44%
		2,5	382	99	62	563	85,44%
		5,0	382	99	62	563	85,44%
2	2,0	1,0	378	97	78	553	84,18%
		1,5	378	97	78	553	84,18%
		2,5	378	97	78	553	84,18%
		5,0	378	97	78	553	84,18%
3	2,0	1,0	377	96	77	556	84,36%
		1,5	377	96	77	556	84,36%
		2,5	377	96	77	556	84,36%
		5,0	377	96	77	556	84,36%
4	2,0	1,0	376	102	78	550	83,73%
		1,5	377	101	78	550	83,82%
		2,5	377	101	78	550	83,82%
		5,0	377	101	78	550	83,82%
5	2,0	1,0	363	130	70	543	81,92%
		1,5	363	130	70	543	81,92%
		2,5	363	130	70	543	81,92%
		5,0	363	130	70	543	81,92%
	2,0	1,0	387	116	61	541	83,98%
		1,5	387	116	61	541	83,98%
		2,5	387	116	61	541	83,98%
		5,0	387	116	61	541	83,98%



7	2,0	1,0	387	107	73	538	83,71%
		1,5	387	107	74	537	83,62%
		2,5	387	107	74	537	83,62%
		5,0	387	107	74	537	83,62%
8	2,0	1,0	386	105	63	551	84,80%
		1,5	386	105	63	551	84,80%
		2,5	386	105	63	551	84,80%
		5,0	386	105	63	551	84,80%
9	2,0	1,0	415	95	66	529	85,43%
		1,5	415	95	67	528	85,34%
		2,5	415	95	67	528	85,34%
		5,0	415	95	67	528	85,34%
10	2,0	1,0	379	121	64	541	83,26%
		1,5	379	121	64	541	83,26%
		2,5	379	121	64	541	83,26%
		5,0	379	121	64	541	83,26%

gamma	C	Akurasi
2,0	1,0	84,08%
	1,5	84,07%
	2,5	84,07%
	5,0	84,07%



Lampiran 4. Confusion Matrix Decision Tree

criterion = gini

Iterasi	criterion	max_depth	TP	FP	FN	TN	Akurasi
1	gini	1	328	153	161	464	71,61%
		5	327	154	76	549	79,20%
		10	364	117	74	551	82,73%
		15	385	96	70	555	84,99%
		20	386	95	69	556	85,17%
2	gini	1	329	146	194	437	69,26%
		5	360	115	114	517	79,29%
		10	383	92	92	539	83,36%
		15	394	81	83	548	85,17%
		20	395	80	85	546	85,08%
3	gini	1	336	137	197	436	69,80%
		5	345	128	78	555	81,37%
		10	389	84	79	554	85,26%
		15	399	74	81	552	85,99%
		20	400	73	81	552	86,08%
4	gini	1	341	137	191	437	70,34%
		5	331	147	82	546	79,29%
		10	377	101	94	534	82,37%
		15	391	87	83	545	84,63%
		20	392	86	82	546	84,81%
5	gini	1	343	150	199	414	68,44%
		5	336	157	77	536	78,84%
		10	382	111	74	539	83,27%
		15	386	107	80	533	83,09%
		20	387	106	79	534	83,27%
6	gini	1	325	178	184	418	67,24%
		5	336	167	66	536	78,91%
		10	382	121	70	532	82,71%
		15	403	100	67	535	84,89%
		20	401	102	66	536	84,80%
	gini	1	346	148	180	431	70,32%
		5	349	145	81	530	79,55%
		10	391	103	82	529	83,26%
		15	405	89	78	533	84,89%
		20	405	89	79	532	84,80%



8	gini	1	337	154	174	440	70,32%
		5	334	157	72	542	79,28%
		10	388	103	96	518	81,99%
		15	407	84	69	545	86,15%
		20	408	83	76	538	85,61%
9	gini	1	355	155	188	407	68,96%
		5	381	129	65	530	82,44%
		10	432	78	83	512	85,43%
		15	445	65	74	521	87,42%
		20	444	66	75	520	87,24%
10	gini	1	351	149	165	440	71,58%
		5	357	143	64	541	81,27%
		10	390	110	64	541	84,25%
		15	404	96	68	537	85,16%
		20	406	94	69	536	85,25%

critierion	max_depth	Akurasi
gini	1	69,79%
	5	79,95%
	10	83,46%
	15	85,24%
	20	85,21%

critierion = entropy

Iterasi	critierion	max_depth	TP	FP	FN	TN	Akurasi
1	entropy	1	481	0	476	149	56,96%
		5	327	154	76	549	79,20%
		10	363	118	69	556	83,09%
		15	384	97	67	558	85,17%
		20	385	96	69	556	85,08%
	entropy	1	475	0	502	129	54,61%
		5	360	115	114	517	79,29%
		10	376	99	84	547	83,45%
		15	398	77	82	549	85,62%
		20	397	78	84	547	85,35%
	entropy	1	473	0	475	158	57,05%



		5	344	129	77	556	81,37%
		10	392	81	84	549	85,08%
		15	400	73	82	551	85,99%
		20	400	73	82	551	85,99%
4	entropy	1	478	0	470	158	57,50%
		5	331	147	82	546	79,29%
		10	377	101	94	534	82,37%
		15	390	88	82	546	84,63%
		20	391	87	82	546	84,72%
5	entropy	1	493	0	460	153	58,41%
		5	336	157	77	536	78,84%
		10	371	122	65	548	83,09%
		15	389	104	79	534	83,45%
		20	388	105	77	536	83,54%
6	entropy	1	503	0	451	151	59,19%
		5	336	167	66	536	78,91%
		10	384	119	69	533	82,99%
		15	399	104	62	540	84,98%
		20	401	102	66	536	84,80%
7	entropy	1	494	0	470	141	57,47%
		5	349	145	81	530	79,55%
		10	384	110	81	530	82,71%
		15	405	89	79	532	84,80%
		20	405	89	80	531	84,71%
8	entropy	1	491	0	468	146	57,65%
		5	334	157	72	542	79,28%
		10	372	119	84	530	81,63%
		15	405	86	65	549	86,33%
		20	406	85	74	540	85,61%
9	entropy	1	510	0	459	136	58,46%
		5	381	129	65	530	82,44%
		10	423	87	62	533	86,52%
		15	442	68	72	523	87,33%
		20	442	68	74	521	87,15%
10	entropy	1	500	0	461	144	58,28%
		5	357	143	64	541	81,27%
		10	385	115	72	533	83,08%
		15	407	93	65	540	85,70%
		20	404	96	68	537	85,16%



critierion	max_depth	Akurasi
entropy	1	57,56%
	5	79,95%
	10	83,40%
	15	85,40%
	20	85,21%



Lampiran 5. Confusion Matrix K-Nearest Neighbor

weights = uniform

Iterasi	weights	n_neighbors	TP	FP	FN	TN	Akurasi
1	uniform	1	376	105	118	507	79,84%
		5	372	109	91	534	81,92%
		10	404	77	118	507	82,37%
		15	384	97	92	533	82,91%
		20	391	90	104	521	82,46%
2	uniform	1	382	93	123	508	80,47%
		5	388	87	104	527	82,73%
		10	412	63	144	487	81,28%
		15	374	101	98	533	82,01%
		20	387	88	114	517	81,74%
3	uniform	1	369	104	93	540	82,19%
		5	371	102	106	527	81,19%
		10	395	78	134	499	80,83%
		15	380	93	116	517	81,10%
		20	386	87	128	505	80,56%
4	uniform	1	391	87	112	516	82,01%
		5	390	88	117	511	81,46%
		10	399	79	137	491	80,47%
		15	390	88	114	514	81,74%
		20	395	83	109	519	82,64%
5	uniform	1	354	139	77	536	80,47%
		5	363	130	88	525	80,29%
		10	378	115	115	498	79,20%
		15	373	120	107	506	79,48%
		20	383	110	112	501	79,93%
6	uniform	1	355	148	109	493	76,74%
		5	366	137	78	524	80,54%
		10	401	102	107	495	81,09%
		15	384	119	96	506	80,54%
		20	393	110	101	501	80,90%
	uniform	1	385	109	123	488	79,00%
		5	384	110	114	497	79,73%
		10	394	100	140	471	78,28%
		15	388	106	116	495	79,91%
		20	395	99	115	496	80,63%



8	uniform	1	366	125	95	519	80,09%
		5	387	104	91	523	82,35%
		10	405	86	116	498	81,72%
		15	383	108	89	525	82,17%
		20	389	102	98	516	81,90%
9	uniform	1	388	122	100	495	79,91%
		5	428	82	90	505	84,43%
		10	431	79	102	493	83,62%
		15	430	80	95	500	84,16%
		20	434	76	100	495	84,07%
10	uniform	1	378	122	83	522	81,45%
		5	399	101	83	522	83,35%
		10	420	80	106	499	83,17%
		15	388	112	81	524	82,53%
		20	405	95	106	499	81,81%

weights	n_neighbors	Akurasi
uniform	1	80,22%
	5	81,80%
	10	81,20%
	15	81,66%
	20	81,66%

weights = distance

Iterasi	weights	n_neighbors	TP	FP	FN	TN	Akurasi
1	distance	1	376	105	118	507	79,84%
		5	378	103	83	542	83,18%
		10	409	72	96	529	84,81%
		15	399	82	83	542	85,08%
		20	398	83	84	541	84,90%
	distance	1	382	93	123	508	80,47%
		5	394	81	93	538	84,27%
		10	413	62	113	518	84,18%
		15	384	91	89	542	83,73%
		20	393	82	93	538	84,18%
	distance	1	369	104	93	540	82,19%



		5	384	89	94	539	83,45%
		10	404	69	104	529	84,36%
		15	403	70	94	539	85,17%
		20	402	71	97	536	84,81%
4	distance	1	391	87	112	516	82,01%
		5	391	87	98	530	83,27%
		10	406	72	104	524	84,09%
		15	403	75	102	526	84,00%
		20	405	73	102	526	84,18%
5	distance	1	354	139	77	536	80,47%
		5	374	119	70	543	82,91%
		10	388	105	86	527	82,73%
		15	389	104	85	528	82,91%
		20	392	101	87	526	83,00%
6	distance	1	355	148	109	493	76,74%
		5	376	127	68	534	82,35%
		10	409	94	91	511	83,26%
		15	404	99	83	519	83,53%
		20	411	92	88	514	83,71%
7	distance	1	385	109	123	488	79,00%
		5	389	105	95	516	81,90%
		10	405	89	106	505	82,35%
		15	408	86	95	516	83,62%
		20	411	83	95	516	83,89%
8	distance	1	366	125	95	519	80,09%
		5	393	98	87	527	83,26%
		10	409	82	88	526	84,62%
		15	398	93	76	538	84,71%
		20	404	87	83	531	84,62%
9	distance	1	388	122	100	495	79,91%
		5	434	76	80	515	85,88%
		10	441	69	84	511	86,15%
		15	446	64	82	513	86,79%
		20	447	63	88	507	86,33%
10	distance	1	378	122	83	522	81,45%
		5	402	98	74	531	84,43%
		10	415	85	81	524	84,98%
		15	402	98	70	535	84,80%
		20	413	87	82	523	84,71%



weights	n_neighbors	Akurasi
distance	1	80,22%
	5	83,49%
	10	84,15%
	15	84,43%
	20	84,43%



Lampiran 6. Source Code Program

evaluasi.py

```
import pandas as pd
import numpy as np
from sklearn.model_selection import KFold
from sklearn.preprocessing import MinMaxScaler
from sklearn.svm import SVC
from sklearn.tree import DecisionTreeClassifier
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score
from sklearn.metrics import confusion_matrix
from sklearn.metrics import classification_report
from termcolor import colored

dataset = pd.read_csv('data_training.csv')

x = dataset.drop('Result', axis=1)
y = dataset['Result']

scaler = MinMaxScaler(feature_range=(-1, 1))
x = scaler.fit_transform(x)

scoresl = []
scoresp = []
scoresr = []
scoresDT = []
scoresKNN = []

cv = KFold(n_splits=10, random_state=42, shuffle=True)

print(colored('\n SUPPORT VECTOR MACHINE (SVM)',
  attrs=['bold']))
print(colored(' Linear:', attrs=['bold']))
cl = input(' C : ')
cl_input = float(cl)
cSVMl = SVC(kernel='linear', C=c_input)
print(colored(' -----
-----', attrs=['bold']))
for train_index, test_index in cv.split(x):
    print(" Train      : ", train_index)
    print(" Test       : ", test_index)

    x_train, x_test, y_train, y_test = x[train_index],
x[test_index], y[train_index], y[test_index]
    cSVMl.fit(x_train, y_train)
    Y_SVMl = cSVMl.predict(x_test)
    skorl = cSVMl.score(x_test, y_test)*100
    print(" Score      :  [%.2f" % skorl, "%]")
    scoresl.append(skorl)
    cmlinear = confusion_matrix(y_test, Y_SVMl)
    print('', cmlinear)

urasi_SVMl = np.mean(scoresl)
```



```

print(" Akurasi:  [%.2f" % akurasi_SVMl, "%]")

print(colored('\n Polynomial:', attrs=['bold']))
degree = input(' Degree : ')
degree_input = float(degree)
cp = input(' C      : ')
cp_input = float(cp)
cSVMp = SVC(kernel='poly', gamma='scale',
degree=degree_input, C=cp_input)
print(colored(' -----
-----', attrs=['bold']))
for train_index, test_index in cv.split(x):
    print(" Train      : ", train_index)
    print(" Test       : ", test_index)

    x_train, x_test, y_train, y_test = x[train_index],
x[test_index], y[train_index], y[test_index]
    cSVMp.fit(x_train, y_train)
    Y_SVMp = cSVMp.predict(x_test)
    skorp = cSVMp.score(x_test, y_test)*100
    print(" Score        :  [%.2f" % skorp, "%]")
    scoresp.append(skorp)
    cmpoly = confusion_matrix(y_test, Y_SVMp)
    print('', cmpoly)

akurasi_SVMp = np.mean(scoresp)
print(" Akurasi:  [%.2f" % akurasi_SVMp, "%]")

print(colored('\n RBF:', attrs=['bold']))
gamma = input(' Gamma   : ')
gamma_input = float(gamma)
cr = input(' C        : ')
cr_input = float(cr)
cSVMr = SVC(kernel='rbf', gamma=gamma_input, C=cr_input)
print(colored(' -----
-----', attrs=['bold']))
for train_index, test_index in cv.split(x):
    print(" Train      : ", train_index)
    print(" Test       : ", test_index)

    x_train, x_test, y_train, y_test = x[train_index],
x[test_index], y[train_index], y[test_index]
    cSVMr.fit(x_train, y_train)
    Y_SVMr = cSVMr.predict(x_test)
    skorr = cSVMr.score(x_test, y_test)*100
    print(" Score        :  [%.2f" % skorr, "%]")
    scoresr.append(skorr)
    cmrbf = confusion_matrix(y_test, Y_SVMr)
    print('', cmrbf)

akurasi_SVMr = np.mean(scoresr)
print(" Akurasi:  [%.2f" % akurasi_SVMr, "%]")

print(colored('\n DECISION TREE', attrs=['bold']))
print(colored(' *criterion = gini / entropy', 'grey'))
print(colored(' *max depth = integer', 'grey'))

```



```

criterion = input(' Criterion   : ')
criterion_input = str(criterion)
max_depth = input(' Max Depth   : ')
max_depth_input = int(max_depth)
cDT = DecisionTreeClassifier(criterion=criterion_input,
max_depth=max_depth_input)
print(colored(' -----
-----', attrs=['bold']))
for train_index, test_index in cv.split(x):
    print(" Train   : ", train_index)
    print(" Test    : ", test_index)

    x_train, x_test, y_train, y_test = x[train_index],
x[test_index], y[train_index], y[test_index]
    cDT.fit(x_train, y_train)
    Y_DT = cDT.predict(x_test)
    skorDT = cDT.score(x_test, y_test)*100
    print(" Score   :  [%.2f" % skorDT, "%]")
    scoresDT.append(skorDT)
    cmDT = confusion_matrix(y_test, Y_DT)
    print('', cmDT)

akurasi_DT = np.mean(scoresDT)
print(" Akurasi:  [%.2f" % akurasi_DT, "%]")

print(colored('\n K-NEAREST NEIGHBORS', attrs=['bold']))
print(colored(' *weights       = uniform / distance',
'grey'))
print(colored(' *n_neighbors = integer', 'grey'))
weights = input(' Weights       : ')
weights_input = str(weights)
n_neighbors = input(' N Neighbors   : ')
n_neighbors_input = int(n_neighbors)
cKNN = KNeighborsClassifier(weights=weights_input,
n_neighbors=n_neighbors_input)
print(colored(' -----
-----', attrs=['bold']))
for train_index, test_index in cv.split(x):
    print(" Train   : ", train_index)
    print(" Test    : ", test_index)

    x_train, x_test, y_train, y_test = x[train_index],
x[test_index], y[train_index], y[test_index]
    cKNN.fit(x_train, y_train)
    Y_KNN = cKNN.predict(x_test)
    skorKNN = cKNN.score(x_test, y_test)*100
    print(" Score   :  [%.2f" % skorKNN, "%]")
    scoresKNN.append(skorKNN)
    cmKNN = confusion_matrix(y_test, Y_KNN)
    print('', cmKNN)

akurasi_KNN = np.mean(scoresKNN)
print(" Akurasi:  [%.2f" % akurasi_KNN, "%]")

print(colored('\n AKURASI :', attrs=['bold']))
print(" Akurasi SVM : %.2f, %.2f, %.2f"

```



```

%(akurasi_SVMl,akurasi_SVMp,akurasi_SVMr), "%")
print(" Akurasi DT : %.2f" % akurasi_DT, "%")
print(" Akurasi KNN : %.2f" % akurasi_KNN, "%")

```

make_model.py

```

import numpy as np
import pandas as pd
from sklearn.svm import SVC
import pickle

x = pd.read_csv('data_training.csv')
a = np.array(x)
y = a[:,16]

x = np.column_stack((x.having_IP_Address, x.URL_Length,
x.Shortning_Service, x.having_At_Symbol,
x.double_slash_redirecting, x.Prefix_Suffix,
x.having_Sub_Domain, x.Domain_registration_length,
x.HTTPS_token, x.Submitting_to_email, x.RightClick,
x.Iframe, x.age_of_domain, x.DNSRecord, x.web_traffic,
x.Statistical_report))

cSVMl = SVC(kernel='linear')
cSVMl.fit(x, y)
model_namel = 'model_l.sav'
pickle.dump(cSVMl, open(model_namel, 'wb'))
print(' Model SVM Linear Successful')

cSVMp = SVC(kernel='poly', gamma='scale', degree=7, C=5.0)
cSVMp.fit(x, y)
model_namep = 'model_p.sav'
pickle.dump(cSVMp, open(model_namep, 'wb'))
print(' Model SVM Polynomial Successful')

cSVMr = SVC(kernel='rbf', gamma=0.3, C=5.0)
cSVMr.fit(x, y)
model_namer = 'model_r.sav'
pickle.dump(cSVMr, open(model_namer, 'wb'))
print(' Model SVM RBF Successful')

```

phishion.py

```

import whois
import dns.resolver
from datetime import datetime
from urllib.parse import urlparse
import urllib.request
import shutil
import re
import sys
import xmltodict

```



```

import json
import socket
import csv
from termcolor import colored

print(colored('
'grey', attrs=['bold']))
print(colored('
'grey', attrs=['bold']))
print(colored('
'grey', attrs=['bold']))
print(colored('
'grey', attrs=['bold']))
print(colored('
'grey', attrs=['bold']))
print(colored('
'grey', attrs=['bold']))
print(colored('
'grey', attrs=['bold']))

while(True):
    url = input(colored('\n INPUT URL: ', 'grey',
attrs=['bold']))
    print(colored('
=====', 'grey',
attrs=['bold']))
    regex = re.compile(
        r'^(?:http|ftp)s?://' # http:// or https://
        r'(?:(?:[A-Z0-9](?:[A-Z0-9-]{0,61}[A-Z0-9
9])?\.)+(?:[A-Z]{2,6}\.?|[A-Z0-9-]{2,}\.?)|' #domain...
        r'localhost|' #localhost...
        r'\d{1,3}\.\d{1,3}\.\d{1,3}\.\d{1,3})' # ...or ip
        r'(?::\d+)?' # optional port
        r'(?:/?|[/?]\S+)$', re.IGNORECASE)
    check_url = re.match(regex, url) is not None

    if check_url == True:
        break
    else:
        print(colored(' Your Input is Not URL', 'red'))

print(colored(' 1. LINEAR', 'grey'))
print(colored(' 2. POLYNOMIAL', 'grey'))
print(colored(' 3. RBF', 'grey'))
pilih_kernel = input(colored(' Pilih Kernel : ',
'grey', attrs=['bold']))
kernel = int(pilih_kernel)
print(colored(' =====',
'grey', attrs=['bold']))

t1 = datetime.now()
obj = urlparse(url)
hostname = obj.hostname
y:
    pywhois = whois.whois(hostname)
cept:
    next

```




```

reader = csv.reader(open('data_testing.csv'))
lines = list(reader)

#Having IP Address
print(colored('\n USING IP ADDRESS', 'grey',
attrs=['bold']))
is_valid = re.match("^(([0-9]|[1-9][0-9]|1[0-9]{2}|2[0-4][0-9]|25[0-5])\.)\{3\}([0-9]|[1-9][0-9]|1[0-9]{2}|2[0-4][0-9]|25[0-5])\$", hostname)
if is_valid == None:
    lines[1][0] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate')
else:
    lines[1][0] = '1'
    print(colored(' [1]', 'red'),'Phising')

#Panjang URL
print(colored(' URL LENGTH', 'grey', attrs=['bold']))
if len(url)<54:
    lines[1][1] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate')

elif len(url)<75:
    lines[1][1] = '0'
    print(colored(' [0]', 'yellow'),'Suspicious')
else:
    lines[1][1] = '1'
    print(colored(' [1]', 'red'),'Phising')

#URL Shortening Services
print(colored(' URL SHORTENING SERVICES', 'grey',
attrs=['bold']))
urlss = [
    'bit.ly',
    'goo.gl',
    'tinyurl.com',
    'buff.ly',
    'adf.ly',
    'ow.ly',
    'polr.me',
    'is.gd',
    'soo.gd',
    's2r.co'
]
for tinyurl in urlss:
    find_tinyurl = hostname.find(tinyurl)
    if find_tinyurl !=-1:
        break

if find_tinyurl !=-1:
    lines[1][2] = '1'
    print(colored(' [1]', 'red'),'Phising')
else:
    lines[1][2] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate')

```



```

#Simbol "@"
print(colored(' SIMBOL "@"', 'grey', attrs=['bold']))
if url.find('@')!=-1:
    lines[1][3] = '1'
    print(colored(' [1]', 'red'),'Phising')
else:
    lines[1][3] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate')

#Simbol "/"
print(colored(' SIMBOL "/"', 'grey', attrs=['bold']))
if url.find('/')>7:
    lines[1][4] = '1'
    print(colored(' [1]', 'red'),'Phising')
else:
    lines[1][4] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate')

#Simbol "-"
print(colored(' SIMBOL "-"', 'grey', attrs=['bold']))

if hostname.find('-')!=-1:
    lines[1][5] = '1'
    print(colored(' [1]', 'red'),'Phising')
else:
    lines[1][5] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate')

#Sub Domain
print(colored(' SUB DOMAIN', 'grey', attrs=['bold']))

negara_TLD = [
    '.ac.',
    '.co.',
    '.desa.',
    '.or.',
    '.net.',
    '.web.',
    '.sch.',
    '.go.'
]

for tld in negara_TLD:
    find_tld = hostname.find(tld)
    if find_tld !=-1:
        break

if hostname.count('.')==1:
    lines[1][6] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate [a]')
if find_tld !=-1:
    titik = hostname.count('.')-1
    if titik==1:
        lines[1][6] = '-1'
        print(colored(' [-1]', 'green'),'Legitimate
]')

```



```

elif titik ==2:
    lines[1][6] = '0'
    print(colored(' [0]', 'yellow'),'Suspicious
[a]')
else:
    lines[1][6] = '1'
    print(colored(' [1]', 'red'),'Phising [a]')
elif hostname.count('.')==2:
    lines[1][6] = '0'
    print(colored(' [0]', 'yellow'),'Suspicious [b]')
else:
    lines[1][6] = '1'
    print(colored(' [1]', 'red'),'Phising [b]')

#Domain Registration Length
print(colored(' DOMAIN REGISTRATION LENGTH', 'grey',
attrs=['bold']))
try:
    cd = pywhois.creation_date
    ud = pywhois.updated_date
    ed = pywhois.expiration_date

    try:
        if ud == None:
            tahun1 = cd.year
            tahun3 = ed.year
            drl = tahun3-tahun1
        elif type(ud) == list:
            string = str(ud)
            d = string[19:23]
            tahun3 = ed.year
            drl = tahun3 - int(d)
        else:
            tahun2 = ud.year
            tahun3 = ed.year
            drl = tahun3-tahun2
    except:
        s = ed[8:12]
        tahun1 = cd.year
        drl = int(s)-tahun1

    try:
        if drl <= 1:
            lines[1][7] = '1'
            print(colored(' [1]', 'red'),'Phising
[a]')
        else:
            lines[1][7] = '-1'
            print(colored(' [-1]',
'green'),'Legitimate')
    except:
        lines[1][7] = '1'
        print(colored(' [1]', 'red'),'Phising [b]')
except:
    lines[1][7] = '1'
    print(colored(' [1]', 'red'),'Phising [c]')

```



```

#HTTPS Token
print(colored(' HTTPS TOKEN', 'grey', attrs=['bold']))
if hostname.find('https')!=-1:
    lines[1][8] = '1'
    print(colored(' [1]', 'red'),'Phising')
else:
    lines[1][8] = '-1'
    print(colored(' [-1]', 'green'),'Legitimate')

#SITE, DRC, IFR
try:
    page = urllib.request.urlopen(url)

    f = open('page_source.txt', 'wb')
    shutil.copyfileobj(page, f)

    print(colored(' SUBMITTING INFORMATION TO EMAIL',
'grey', attrs=['bold']))
    with open('page_source.txt', 'r') as site:
        if 'mail()' in site.read():
            lines[1][9] = '1'
            print(colored(' [1]', 'red'),'Phising
[a]')
            elif 'mailto:' in site.read():
                lines[1][9] = '1'
                print(colored(' [1]', 'red'),'Phising
[b]')
            else:
                lines[1][9] = '-1'
                print(colored(' [-1]',
'green'),'Legitimate')

        print(colored(' DISABLE RIGHT CLICK', 'grey',
attrs=['bold']))
        with open('page_source.txt', 'r') as drc:
            if 'contextmenu' in drc.read():
                lines[1][10] = '1'
                print(colored(' [1]', 'red'),'Phising
[a]')
            else:
                lines[1][10] = '-1'
                print(colored(' [-1]',
'green'),'Legitimate')

        print(colored(' IFRAME REDIRECTION', 'grey',
attrs=['bold']))
        with open('page_source.txt', 'r') as ifr:
            if '<iframe' in ifr.read():
                lines[1][11] = '1'
                print(colored(' [1]', 'red'),'Phising
]')
            else:
                lines[1][11] = '-1'
                print(colored(' [-1]',
'green'),'Legitimate')

```



```

except:
    print(colored(' SUBMITTING INFORMATION TO EMAIL',
'grey', attrs=['bold']))
    lines[1][9] = '1'
    print(colored(' [1]', 'red'),'Phising [c]')
    print(colored(' DISABLE RIGHT CLICK', 'grey',
attrs=['bold']))
    lines[1][10] = '1'
    print(colored(' [1]', 'red'),'Phising [b]')
    print(colored(' IFRAME REDIRECTION', 'grey',
attrs=['bold']))
    lines[1][11] = '1'
    print(colored(' [1]', 'red'),'Phising [b]')

#Age of Domain
print(colored(' AGE OF DOMAIN', 'grey', attrs=['bold']))
dn = datetime.now()
try:
    cd = pywhois.creation_date
    try:
        tahun1 = dn.year
        tahun2 = cd.year
        bulan1 = dn.month
        bulan2 = cd.month
        tahunaod = (tahun1-tahun2)*12
        bulanaod = bulan1-bulan2
        aod = (tahunaod-bulanaod)/12
    except:
        next

    try:
        if aod >= 6:
            lines[1][12] = '-1'
            print(colored(' [-1]',
'green'),'Legitimate')
        else:
            lines[1][12] = '1'
            print(colored(' [1]', 'red'),'Phising
[a]')
    except:
        lines[1][12] = '1'
        print(colored(' [1]', 'red'),'Phising [b]')
except:
    lines[1][12] = '1'
    print(colored(' [1]', 'red'),'Phising [c]')

#DNS Records
print(colored(' DNS RECORDS', 'grey', attrs=['bold']))
def get_records():
    ids = [
        'CNAME',
        'MX',
        'NS',
        'PTR',
        'SRV',
        'SOA',

```



```

        'TXT',
    ]
    for a in ids:
        try:
            answers = dns.resolver.query(hostname, a)
            return answers
        except:
            pass

dns_record = get_records()

if dns_record is None:
    lines[1][13] = '-1'
    print(colored(' [-1]', 'red'),'Phising')
else:
    lines[1][13] = '1'
    print(colored(' [1]', 'green'),'Legitimate')

#Website Traffic
xml =
urllib.request.urlopen('http://data.alexa.com/data?cli=10&d
at=s&url={}'.format(url)).read()

result= xmldict.parse(xml)

data = json.dumps(result).replace("@","")
data_tojson = json.loads(data)

print(colored(' WEBSITE TRAFFIC', 'grey', attrs=['bold']))
try:
    url =
data_tojson["ALEXA"]["SD"][1]["POPULARITY"]["URL"]
rank=
data_tojson["ALEXA"]["SD"][1]["POPULARITY"]["TEXT"]

    if int(rank) < 100000:
        lines[1][14] = '0'
        print(colored(' [0]', 'green'),'Legitimate')
    else:
        lines[1][14] = '-1'
        print(colored(' [-1]', 'yellow'),'Suspicious')
except:
    lines[1][14] = '1'
    print(colored(' [1]', 'red'),'Phising')

#Statistical-Reports Based Features
print(colored(' STATISTICAL-REPORTS BASED FEATURES',
'grey', attrs=['bold']))
ipaddrs = socket.gethostbyname(hostname)

p_domains = [
    'esy.es',
    'hol.es',
    '000webhostapp.com',
    '16mb.com',
    'bit.ly',

```



```

        'for-our.info',
        'beget.tech',
        'blogspot.com',
        'weebly.com',
        'raymannag.ch',
    ]
    for domain in top_domains:
        find_domain = hostname.find(domain)
        if find_domain != -1:
            break

    with open('top_ips.csv', 'r') as top_ips:
        if str(ipaddrs) in top_ips.read():
            lines[1][15] = '1'
            print(colored(' [1]', 'red'),'Phising [a]')
        elif find_domain != -1:
            lines[1][15] = '1'
            print(colored(' [1]', 'red'),'Phising [b]')
        else:
            lines[1][15] = '-1'
            print(colored(' [-1]', 'green'),'Legitimate')

    with open('data_testing.csv', 'w') as f:
        writer = csv.writer(f)
        writer.writerows(lines)
    f.close()

    import numpy as np
    import pandas as pd
    from sklearn.svm import SVC
    import pickle

    # Load model
    if kernel == 1:
        loaded_model = pickle.load(open('model_1.sav', 'rb'))
    elif kernel == 2:
        loaded_model = pickle.load(open('model_p.sav', 'rb'))
    elif kernel == 3:
        loaded_model = pickle.load(open('model_r.sav', 'rb'))
    else:
        loaded_model = pickle.load(open('model_p.sav', 'rb'))

    x_predict = pd.read_csv('data_testing.csv')
    b = np.array(x_predict)
    y_predict = b[0:,:16]

    prediksi = loaded_model.predict(y_predict)
    score = loaded_model.decision_function(y_predict)
    non_phish = ((1-score)/2)*100
    phish = (100-non_phish)

    print(colored('\n RESULT:', 'grey', attrs=['bold']))
    print(colored(' =====',
    'grey', attrs=['bold']))
    print(colored(' PHISHING PERCENTAGE : %.2f' % phish,
    'grey', attrs=['bold']), colored('%', 'grey', attrs=['bold']))

```



```
if prediksi == 1:
    print('', colored(prediksi, 'red',
    attrs=['bold']), colored(' PHISHING', 'red',
    attrs=['bold']))
else:
    print('', colored(prediksi, 'green',
    attrs=['bold']), colored(' NON PHISHING', 'green',
    attrs=['bold']))

t2 = datetime.now()
total = t2 - t1
print(colored('\n Scanning Completed in: ', 'grey'),
colored(total, 'grey'))
```





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS HASANUDDIN
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TELEPON (0411) 586200, 584002 FAX. (0411)

SURAT PERSETUJUAN

Nomor : 33068 /UN4.1.1.2.1.1/PK.02.03/2019

Berdasarkan Peraturan Rektor Universitas Hasanuddin tentang Penyelenggaraan Program Sarjana Nomor : 2781/UN4.1/KEP/2018 TANGGAL 16 Juli 2018, dengan ini menerangkan bahwa :

Nama : DIKI WAHYUDI
Tempat/Tanggal Lahir : LAKALUKKU / 5 MEI 1997
Stambuk : D42115518
Fakultas : TEKNIK
Program Studi : TEKNIK INFORMATIKA

Telah memenuhi syarat untuk Ujian Skripsi Strata I (S1). Demikian Surat Persetujuan ini dibuat untuk digunakan dalam proses pelaksanaan ujian skripsi, dengan ketentuan dapat mengikuti Wisuda **PERIODE III MARET 2020**. Jika persyaratan kelulusan/wisuda telah dipenuhi. Terima Kasih.

Makassar, 19 Desember 2019

a.n. Kepala Bagian Akademik

*Kepala Sub Bagian Pendidikan dan Evaluasi
Universitas Hasanuddin,*


Mursalim, S.Sos
Nip. 19730216199601 1 001



Keterangan :

Nomor Use : D42115518
Nomor Password/Pin : 32057945
Alamat Websit : [htt://unhas.ac.id/akad/wisuda/](http://unhas.ac.id/akad/wisuda/)
Layanan E-Mail : alimkomath@gmail.com

- Catatan :
1. Bagi Mahasiswa yang telah melaksanakan Ujian Sarjana dan dinyatakan lulus, segera menyerahkan lembar pengesahan Skripsi dan Berita Acara Ujian Sarjana ke Sub Bagian Akademik Fakultas, untuk memperoleh nomor Alumni dan didaftar sebagai Wisudawan pada periode berjalan.
 2. Jika terjadi perubahan Judul Skripsi agar melaporkan ke kasubag. Pendidikan Fakultas sebelum didaftar sebagai Wisudawan pada Periode berjalan
 3. Pada saat ON - LINE Mahasiswa diharapkan mengisi Identitas diri sesuai Surat Izin Ujian ini.
 4. Surat izin ujian hanya berlaku untuk Wisuda periode berjalan (Wisuda Maret 2020)



Optimization Software:
www.balesio.com



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FAKULTAS TEKNIK

Kampus Fakultas Teknik Unhas, Jl. PorosMallino, Gowa
<http://eng.unhas.ac.id>, Email : teknik@unhas.ac.id

SURAT PENUGASAN
No. 3940/UN4.7.1/DA.08.04/2019

Dari : Dekan Fakultas Teknik Universitas Hasanuddin.

Kepada : Mereka yang tercantum namanya di bawah ini.

Isi : 1. Bahwa berdasarkan peraturan Akademik Universitas Hasanuddin Tahun 2003 Pasal 36 butir 3 point a, b (SK. Rektor Unhas Nomor : 1067 /J04/PP.08/2008), dengan ini menugaskan Saudara sebagai PANITIA SEMINAR PROPOSAL Strata Satu (S1) Departemen Teknik Informatika Fakultas Teknik Universitas Hasanuddin dengan susunan sebagai berikut :

Pembimbing I / Ketua : 1. Dr.Eng. Muhammad Niswar, ST., M.IT

Pembimbing II / Sekretaris : 2. A. Ais Prayogi Alimuddin, ST., M.Eng

Anggota : 3. Dr. Ir. Zahir Zainuddin, M.Sc

4. Adnan, ST., M.T., Ph.D

untuk menguji bagi mahasiswa tersebut di bawah ini :

Nama/NIM : Diki Wahyudi D421 15 518

Departemen : Teknik Informatika


Judul Thesis/Skripsi : " Aplikasi Pendeteksi Website Phising
Menggunakan Support Vector Machine (SVM) "

2. Waktu seminar ditetapkan oleh Panitia Seminar Proposal Strata Satu (S1).
3. Agar Surat penugasan ini dilaksanakan sebaik-baiknya dengan penuh rasa tanggung jawab.
4. Surat penugasan ini berlaku sejak tanggal ditetapkan sampai dengan berakhirnya Seminar tersebut dengan ketentuan bahwa segala sesuatunya akan ditinjau dan diperbaiki sebagaimana mestinya apabila dikemudian hari ternyata terdapat kekeliruan dalam keputusan ini.

Ditetapkan di Gowa,
Pada tanggal 4 Maret 2019

n.n. Dekan,

 Wakil Dekan Bidang Akademik


Prof. Baharuddin Hamzah, ST., M.Arch., Ph.D
NIP. 19690308 199512 1 001

Tembusan :



Unhas
Departemen Teknik Informatika FT-UH
bersangkutan





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS HASANUDDIN
FAKULTAS TEKNIK

DEPARTEMEN TEKNIK INFORMATIKA

Kampus Fakultas Teknik Unhas, Jl. Poros Malino, Gowa
<http://eng.unhas.ac.id/informatika>, Email : informatika@unhas.ac.id

BERITA ACARA UJIAN SEMINAR PROPOSAL

Pada hari ini Rabu , tanggal 13 Maret 2019 Pukul 11.00 WITA-Selesai bertempat di Ruang Lab. AIMP Teknik Informatika, telah dilaksanakan Ujian Seminar Proposal bagi Saudara :

Nama : Diki Wahyudi

No. Stambuk : D421 15 518

Fakultas/Departemen : Teknik/Teknik Informatika

Judul Skripsi : “ Aplikasi Pendeteksi Website Phising Menggunakan Support Vector Machine (SVM) “

Yang dihadiri oleh panitia Ujian Seminar Proposal sebagai berikut :

No.	N a m a	Jabatan	Tanda tangan
1.	Dr.Eng. Muhammad Niswar, ST., M.IT	Pemb I/Ketua	1...
2.	A. Ais Prayogi Alimuddin, ST., M.Eng	Pemb II/Sekretaris	2...
3.	Dr. Ir. Zahir Zainuddin, M.Sc	Anggota	3...
4.	Adnan, ST., M.T., Ph.D	Anggota	4...

Hasil keputusan panitia penilai Ujian Seminar Proposal Tugas Akhir : **Lulus / ~~Tidak lulus~~** dengan nilai angka**86**..... dan huruf**A**.....

Gowa, 13 Maret 2019
Ketua/Sekretaris Panitia Ujian,

Dr.Eng. Muhammad Niswar, ST., M.IT





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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<http://eng.unhas.ac.id/informatika>, Email : informatika@unhas.ac.id

SURAT KETERANGAN NILAI UJIAN SEMINAR PROPOSAL

Nomor : 263.../UN4.7.7.TI/DA.04.09/2019

Pada hari ini Rabu , tanggal 13 Maret 2019 Pukul 11.00 WITA-Selesai bertempat di Ruang Lab. AIMP Teknik Informatika, telah dilaksanakan Ujian Seminar Proposal bagi Saudara :

Nama : Diki Wahyudi
No. Stambuk : D421 15 518
Fakultas/Departemen : Teknik/Teknik Informatika
Judul Skripsi : “ Aplikasi Pendeteksi Website Phising Menggunakan Support Vector Machine (SVM) “

Setelah pembawa ujian seminar proposal menguraikan tugas akhirnya dan menjawab pertanyaan dengan dinyatakan lulus/tidak lulus, Baik/Cukup/Sedang.

Maka berdasarkan hasil penilaian dinyatakan lulus / tidak lulus

Dengan nilai :

A - A - B+ - B - B - C+ - C - D - E

Mengetahui:

A.n. Ketua Departemen Teknik Informatika
Sekretaris Departemen

Dr. Indrabayu, ST., M.T., M.Bus,Sys
Nip.197507162002121004

Dosen Penguji,

Dr.Eng. Muhammad Niswar, ST., M.IT
Nip.197309221999031001

Diketahui oleh
Dekan
Wakil Dekan Bidang Akademik,
Prof. Baharuddin Hamzah, ST., M.Arch., Ph.D
Nip. 19690308-199512 1 001





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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Kampus Fakultas Teknik Unhas, Jl. Poros Malino, Gowa
<http://eng.unhas.ac.id/informatika>, Email : informatika@unhas.ac.id

DAFTAR HADIR SEMINAR HASIL

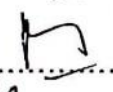

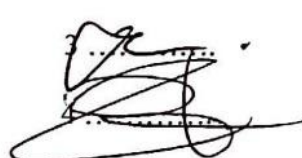
Nama/Stambuk : 1. Diki Wahyudi D421 15518

Judul Skripsi/T.A : “Aplikasi Pendeteksi Website Phising Menggunakan Support Vector Machine (SVM)”

Hari/Tanggal : Rabu, 4 Desember 2019

Jam : 09.00 Wita – Selesai

Tempat : Ruang Lab. UBICON Departemen Teknik Informatika Gowa


No.	Jabatan	Nama Dosen	Tanda Tangan
L.	Pembimbing-I	1. Dr.Eng. Muhammad Niswar,ST.,M.I.T	1..... 
	Pembimbing II	2. A. Ais Prayogi Alimuddin,ST.M.Eng	2..... 
II.	Anggota Penguji	3. Dr. Ir. Zahir Zainuddin,M.Sc	
		4. Adnan,ST.,M.T.Ph.D	

PANITIA UJIAN

Ketua,


Dr.Eng. Muhammad Niswar,ST.,M.I.T

Sekretaris,


A. Ais Prayogi Alimuddin,ST.M.Eng





BERITA ACARA SEMINAR HASIL

Pada hari ini Rabu, tanggal 4 Desember 2019 Pukul 09.00 WITA - Selesai bertempat di Ruang Lab.UBICON Departemen Teknik Informatika, telah dilaksanakan Seminar Hasil bagi Saudara :

Nama : Diki Wahyudi
No. Stambuk : D421 15518
Fakultas/Departemen : Teknik/Teknik Informatika
Judul Skripsi : "Aplikasi Pendeteksi Website Phising Menggunakan Support Vector Machine (SVM)"

Yang dihadiri oleh Tim Penguji Seminar Hasil sebagai berikut :

No.	Nama	Jabatan	Tanda tangan
1.	Dr.Eng. Muhammad Niswar,ST.,M.I.T	Pemb I/Ketua	1...
2.	A. Ais Prayogi Alimuddin,ST.M.Eng	Pemb II/Sekretaris	2...
3.	Dr. Ir. Zahir Zainuddin,M.Sc	Anggota	3...
4.	Adnan,ST.,M.T.Ph.D	Anggota	4...

Hasil keputusan Tim Penguji Seminar Hasil : ~~Lulus~~ / ~~Tidak-lulus~~ dengan nilai angka ...8.7.....
dan hurufA.....

Makassar, 4 Desember 2019

Ketua/Sekretaris Panitia Ujian,

Dr.Eng. Muhammad Niswar,ST.,M.I.T





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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<http://eng.unhas.ac.id/informatika>, Email : informatika@unhas.ac.id

SURAT KETERANGAN NILAI SEMINAR HASIL

Nomor : 735 / UN4.7.7.TI/PK.03.06/2019

Pada hari ini Rabu, tanggal 4 Desember 2019 Pukul 09.00 WITA - Selesai bertempat di Ruang Lab.UBICON Departemen Teknik Informatika, telah dilaksanakan Seminar Hasil bagi Saudara :

Nama : Diki Wahyudi
No. Stambuk : D421 15518
Fakultas/Departemen : Teknik/Teknik Informatika
Judul Skripsi : "Aplikasi Pendeteksi Website Phising Menggunakan Support Vector Machine (SVM)"

Setelah pembawa seminar hasil menguraikan tugas akhirnya dan menjawab pertanyaan dari Tim Penguji dinyatakan Lulus / Tidak Lulus dengan nilai :

A- B+ B B C+ C D E

Mengetahui:

Ketua Departemen Tek.Informatika,

Dr. Amir Ahmad Ilham, ST., M.I.T
Nip. 19731010 199802 1 001

Dosen Penguji,

Dr.Eng. Muhammad Niswar, ST., M.I.T
Nip. 19730922 199903 1 001

Diketahui oleh,

a.n Dekan,

Wakil Dekan Bidang Akademik, Riset dan Inovasi

Prof. Baharuddin Hamzah, ST., M.Arch., Ph.D
Nip. 19690308 199512 1 001





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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DEPARTEMEN TEKNIK INFORMATIKA

Kampus Fakultas Teknik Unhas, Jl. Puros Malino, Gowa
<http://eng.unhas.ac.id/informatika>, Email : informatika@unhas.ac.id

DAFTAR HADIR UJIAN SKRIPSI MAHASISWA
FAKULTAS TEKNIK UNHAS

Nama/Stambuk : Diki Wahyudi D421 15518

Judul Skripsi/T.A : “Aplikasi Pendeteksi Website Phishing Menggunakan Machine Learning”

Hari/Tanggal : Jum’at, 3 Januari, 2020

Jam : 09.00 Wita – Selesai

Tempat : Ruang Lab.UBICON Departemen Teknik Informatika

No.	Jabatan	Nama Dosen	Tanda Tangan
I.	Pembimbing I	1. Dr.Eng.Muhammad Niswar,ST.,M.I.T	1.....
	Pembimbing II	2. A.Ais Prayogi Alimuddin,ST.M.Eng	2.....
II.	Anggota Penguji	3. Dr. Ir. Zahir Zainuddin,M.Sc	3.....
		4. Adnan,ST.,M.T.Ph.D	4.....

PANITIA UJIAN

Ketua,

Dr.Eng.Muhammad Niswar,ST.,M.I.T

Sekretaris,

A.Ais Prayogi Alimuddin,ST.M.Eng





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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<http://eng.unhas.ac.id/informatika>, Email : informatika@unhas.ac.id

BERITA ACARA UJIAN SKRIPSI

Pada hari ini Jum'at, tanggal 3 Januari 2020 Pukul 09.00 WITA - Selesai bertempat di Ruang Lab. UBICON Departemen Teknik Informatika, telah dilaksanakan Ujian Skripsi bagi Saudara :

Nama : Diki Wahyudi
No. Stambuk : D421 15518
Fakultas/Departemen : Teknik/Teknik Informatika
Judul Skripsi : "Aplikasi Pendeteksi Website Phishing Menggunakan Machine Learning"

Yang dihadiri oleh Tim Penguji Ujian Skripsi sebagai berikut :

No.	Nama	Jabatan	Tanda tangan
1.	Dr.Eng.Muhammad Niswar,ST.,M.I.T	Pemb I/Ketua	1...
2.	A.Ais Prayogi Alimuddin,ST.M.Eng	Pemb II/Sekretaris	2...
3.	Dr. Ir. Zahir Zainuddin,M.Sc	Anggota	3...
4.	Adnan,ST.,M.T.Ph.D	Anggota	4...

Hasil keputusan Tim Penguji Ujian Skripsi/Tugas Akhir : **Lulus** / ~~Tidak lulus~~ dengan nilai angka dan huruf

Gowa, 3 Januari, 2020

Ketua/Sekretaris Panitia Ujian,

Dr.Eng.Muhammad Niswar,ST.,M.I.T





KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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Kampus Fakultas Teknik Unhas, Jl. Poros Malino, Gowa
<http://eng.unhas.ac.id/informatika>, Email : informatika@unhas.ac.id

SURAT KETERANGAN NILAI UJIAN SKRIPSI

Nomor : *03* / UN4.7.7.TI/PK.03.06/20*20*

Pada hari ini **Jum'at**, tanggal **3 Januari, 2020** Pukul **09.00 WITA** - **Selesai** bertempat di **Ruang Lab.UBICON Departemen Teknik Informatika**, telah dilaksanakan Ujian Skripsi bagi Saudara :

Nama : Diki Wahyudi
No. Stambuk : D421 15518
Fakultas/Departemen : Teknik/Teknik Informatika
Judul Skripsi : **"Aplikasi Pendeteksi Website Phishing Menggunakan Machine Learning"**

Setelah pembawa ujian Skripsi menguraikan tugas akhirnya dan menjawab pertanyaan dari Tim Penguji dinyatakan Lulus / Tidak Lulus dengan nilai :

(A) — A — B+ — B — B — C+ — C — D — E

Mengetahui:

Ketua Departemen Tek.Informatika,

(Signature)
Dr. Amil Ahmad Ilham, ST M.I.T
Nip. 19731010 199802 1 001

Dosen Penguji,

(Signature)
Dr.Eng.Muhammad Niswar, ST., M.I.T
Nip. 19730922 199903 1 001

Diketahui oleh,
a.n. Dekan,
(Signature) Wakil Dekan Bidang Akademik, Riset dan Inovasi

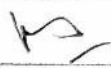

(Signature)
Prof. Baharuddin Hamzah, ST., M.Arch., Ph.D
Nip. 19690308 199512 1 001














KARTU BIMBINGAN SKRIPSI

Prodi SI Teknik Informatika Universitas Hasanuddin

Stb.	Nama Mahasiswa
D42115518	Diki Wahyudi

Pembimbing.	Nama Pembimbing	Paraf & Tgl. Persetujuan Ujian Akhir
I	Dr. Eng. Muhammad Niswar, ST., M.IT	
II	A. Ais Prayogi Alimuddin, ST., M.Eng	
No SK Pemb:		

Judul Skripsi:	Aplikasi Pendeteksi Website Phishing Menggunakan Machine Learning
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No.	Tanggal Bimbingan	Uraian Kegiatan Bimbingan	Paraf Pemb.
1	15 / 04 / 2019	Konsultasi Dataset	
2	24 / 04 / 2019	Konsultasi metode ekstraksi fitur	
3	07 / 05 / 2019	Konsultasi metode yang akan digunakan	
4	22 / 09 / 2019	Konsultasi hasil pengujian sistem	
5	06 / 10 / 2019	Bimbingan Penulisan skripsi	
6	12 / 11 / 2019	Bimbingan pengujian sistem	
7	25 / 11 / 2019	Bimbingan skripsi	
8	20 / 11 / 2019	Bimbingan skripsi	
9	04 / 12 / 2019	Ditfun revisi skripsi	
	/ 2019	Asistensi hasil revisi seminar hasil	
	/ 2019	Asistensi hasil revisi seminar hasil	



LEMBAR PERBAIKAN SKRIPSI

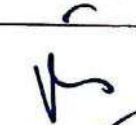

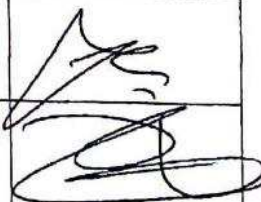
"APLIKASI PENDETEKSI WEBSITE PHISHING MENGGUNAKAN MACHINE LEARNING"

OLEH:


DIKI WAHYUDI
NIM D42115518

Skripsi ini telah dipertahankan pada Ujian Akhir Sarjana tanggal 04 Januari 2020.
Telah dilakukan perbaikan penulisan dan isi skripsi berdasarkan usulan dari penguji dan pembimbing skripsi.

Persetujuan perbaikan oleh tim penguji:

	Nama	Tanda Tangan
Ketua	Dr. Eng. Muhammad Niswar, ST., M.IT.	
Sekretaris	A. Ais Prayogi Alimuddin, ST., M.Eng.	
Anggota	Dr. Ir. Zahir Zainuddin, M.Sc.	
	Adnan, ST., M.T., Ph.D.	

Persetujuan Perbaikan oleh pembimbing:

Pembimbing	Nama	Tanda Tangan
I	Dr. Eng. Muhammad Niswar, ST., M.IT.	
II	A. Ais Prayogi Alimuddin, ST., M.Eng.	