									⊢—	750/ Advanced - 1				<u> </u>		1	Aver	
WB Random Attack		25% Adv	ersarial			50% Adversaria	I <u>NOT</u> TRA					versarial			_	L00% Adve		
<u>Model</u>		<u>Р</u>	<u>FN</u>	TP/Recall	<u>Precision</u>	TN FP	<u>FN</u>	TP/Recall	Precision			<u>FN</u>	TP/Recall	<u>Precision</u>	TN FP			Precision
Binary Dense	0.93244		0.03569			0.88548 0.1145					0.23459					0.25171	0.74829	
Binary LSTM	0.93412	0.06588				0.90832 0.0916					0.25281					0.28558	0.71442	
Random Forest	0.92226	0.07774				0.89596 0.1040					0.19906	0.20242				0.29765	0.70235	
VM Classifier	0.77701	0.22299				0.75519 0.2448					0.33494					0.16642	0.83358	
nearest Neighbors	0.93350	0.06650	0.05506			0.89964 0.1003				0.79623	0.20377	0.20527				0.29842		
semble			0.02240	0.97760	0.44030		0.03693	0.96307	0.64646			0.07384	0.92616	0.82122		0.09940	0.90060	1.00000
/B Strategic-Timed Att		25% Adv	orcarial			50% Adversaria	I NOT TRA	INING SET			75% Ad	versarial			_	L00% Adve	rearial	
lodel		- 23% Auv	FN	TP/Recall	Procision	TN FP	FN FN	TP/Recall	Drocision	TN		FN	TP/Recall	Procision				Precision
nary Dense	0.94614	0.05386			FIECISION	0.99921 0.0007			FIECISION		0.09034			FIECISIOII	INTE	0.00153	0.99847	FIECISION
nary LSTM	0.94614	0.03386				0.99935 0.0006					0.16345					0.00133	0.99823	
andom Forest	0.51125	0.00073	0.02337	0.57005		0.55555 0.0000	0.00033	0.55507		0.03033	0.10545	0.022-11	0.57755			0.00177	0.55025	
VM Classifier						•												
nearest Neighbors						Ī												
nsemble			0.01003	0.98997	0 51396		0.00003	0.99997	0.73236			0.00217	0.99783	0.91823		0.00016	0.99984	1 00000
Citible			0.01003	0.50557	0.31330		0.00003	0.55557	0.73230			0.00217	0.55705	0.51025		0.00010	0.55504	1.00000
ox prediction		25% Adv	ersarial			50% Adversaria	I <u>NOT</u> TRA	INING SET			75% Ad	versarial			_	L00% Adve	rsarial	
<u>/lodel</u>	TN I	<u>-Р</u>	<u>FN</u>	TP/Recall	Precision	TN FP	<u>FN</u>	TP/Recall	Precision			<u>FN</u>	TP/Recall	Precision	TN FP	<u>FN</u>	TP/Recall	Precision
inary Dense	0.92710	0.07290	0.05493	0.94507		0.98790 0.0121	0.02443	0.97557		0.98714	0.01286	0.02944	0.97056			0.06882	0.93118	
nary LSTM	0.89614	0.10386	0.03706	0.96294		0.98241 0.0175	9 0.01657	0.98343		0.98434	0.01566	0.02908	0.97092			0.07303	0.92697	
indom Forest																		
/M Classifier																		
earest Neighbors																		
semble			0.01743	0.98257	0.43224		0.00608	0.99392	0.65921			0.0084503	0.9915496	0.7817056		0.01609	0.98391	1.00000
box random		25% Adv	ersarial			50% Adversaria	I NOT TRA	INING SET			75% Ad	versarial			1	L00% Adve	rsarial	
odel .	TN I	Р	FN	TP/Recall	Precision	TN FP	FN	TP/Recall	Precision	TN		FN	TP/Recall	Precision	TN FP			Precision
ary Dense	0.98239	0.01761	0.03583			0.99028 0.0097					0.01389	0.02343				0.02515	0.97485	
•	0.97485	0.02515				0.98728 0.0127					0.01371					0.03322	0.96678	
ary LSTM																		
•																		
ndom Forest																		
ndom Forest M Classifier																		
dom Forest 1 Classifier arest Neighbors			0.00946	0.99054	0.44304		0.00492	0.99508	0.56421			0.00312	0.99688	0.69092		0.00128	0.99872	1.00000
ndom Forest M Classifier earest Neighbors semble				0.99054	0.44304				0.56421				0.99688	0.69092				1.00000
ndom Forest VI Classifier earest Neighbors semble  ox timed		25% Adv	ersarial			50% Adversaria	I <u>NOT</u> TRA	INING SET				versarial				L00% Adve	rsarial	
andom Forest //M Classifier nearest Neighbors nsemble nox timed odel	TN !	<u>P</u>	ersarial <u>FN</u>	TP/Recall		<u>TN FP</u>	I <u>NOT</u> TRA	INING SET TP/Recall			<u>FP</u>	versarial <u>FN</u>	TP/Recall			100% Adve <u>FN</u>	rsarial TP/Recall	1.00000 Precision
Indom Forest M Classifier Bearest Neighbors Semble Box timed Odel Darry Dense	TN !	0.07400	ersarial FN 0.00200	<b>TP/Recall</b> 0.99800		<b>TN FP</b> 0.99597 0.0040	I NOT TRA FN 3 0.00232	INING SET TP/Recall 0.99768		0.98710	<b>FP</b> 0.01290	versarial FN 0.01632	<b>TP/Recall</b> 0.98368			L00% Adve FN 0.07356	rsarial TP/Recall 0.92644	
ndom Forest M Classifier earest Neighbors semble ox timed odel nary Dense nary LSTM	TN !	<u>P</u>	ersarial FN 0.00200	<b>TP/Recall</b> 0.99800		<u>TN FP</u>	I NOT TRA FN 3 0.00232	INING SET TP/Recall 0.99768		0.98710	<u>FP</u>	versarial FN 0.01632	<b>TP/Recall</b> 0.98368			100% Adve <u>FN</u>	rsarial TP/Recall	
ndom Forest M Classifier eearest Neighbors semble  oox timed odel nary Dense nary LSTM ndom Forest	TN !	0.07400	ersarial FN 0.00200	<b>TP/Recall</b> 0.99800		<b>TN FP</b> 0.99597 0.0040	I NOT TRA FN 3 0.00232	INING SET TP/Recall 0.99768		0.98710	<b>FP</b> 0.01290	versarial FN 0.01632	<b>TP/Recall</b> 0.98368			L00% Adve FN 0.07356	rsarial TP/Recall 0.92644	
ndom Forest M Classifier earest Neighbors semble  ox timed odel nary Dense nary LSTM indom Forest M Classifier	TN !	0.07400	ersarial FN 0.00200	<b>TP/Recall</b> 0.99800		<b>TN FP</b> 0.99597 0.0040	I NOT TRA FN 3 0.00232	INING SET TP/Recall 0.99768		0.98710	<b>FP</b> 0.01290	versarial FN 0.01632	<b>TP/Recall</b> 0.98368			L00% Adve FN 0.07356	rsarial TP/Recall 0.92644	
ndom Forest M Classifier earest Neighbors semble  ox timed odel ary Dense ary LSTM ndom Forest M Classifier earest Neighbors	TN !	0.07400	ersarial FN 0.00200 0.00492	TP/Recall 0.99800 0.99508	Precision	<b>TN FP</b> 0.99597 0.0040	FN 3 0.00232 0 0.00180	INING SET TP/Recall 0.99768 0.99820	Precision	0.98710	<b>FP</b> 0.01290	versarial FN 0.01632 0.01550	TP/Recall 0.98368 0.98450	Precision		<b>FN</b> 0.07356 0.07302	rsarial TP/Recall 0.92644 0.92698	Precision
indom Forest //M Classifier learest Neighbors lesemble  box timed  odel leary Dense leary LSTM leadom Forest //M Classifier learest Neighbors	TN !	0.07400	ersarial FN 0.00200	TP/Recall 0.99800 0.99508		<b>TN FP</b> 0.99597 0.0040	I NOT TRA FN 3 0.00232	INING SET TP/Recall 0.99768 0.99820		0.98710	<b>FP</b> 0.01290	versarial FN 0.01632	TP/Recall 0.98368 0.98450	Precision		L00% Adve FN 0.07356	rsarial TP/Recall 0.92644 0.92698	
andom Forest //M Classifier nearest Neighbors nsemble  Doox timed  Odel nary Dense nary LSTM andom Forest //M Classifier nearest Neighbors nearest Neighbors nearest Neighbors	TN !	0.07400	ersarial FN 0.00200 0.00492 0.00061	TP/Recall 0.99800 0.99508	Precision	<b>TN FP</b> 0.99597 0.0040	FN 3 0.00232 0 0.00180 0.00025	TP/Recall 0.99768 0.99820 0.99975	Precision	0.98710	<b>FP</b> 0.01290 0.01329	versarial FN 0.01632 0.01550	TP/Recall 0.98368 0.98450	Precision	TN FP	<b>FN</b> 0.07356 0.07302	rsarial TP/Recall 0.92644 0.92698 0.97821	Precision
adom Forest  A Classifier Parest Neighbors Parest Neighbors  A Classifier Parest Neighbors  A Classifier Parest Neighbors  A Classifier Parest Neighbors  B Classifier Parest Neighbors  B Classifier Parest Neighbors  B Classifier  B Classifi	TN 1 0.92600 0.93372	0.07400 0.06628	ersarial FN 0.00200 0.00492 0.00061	TP/Recall 0.99800 0.99508	<u>Precision</u> 0.49309	TN FP 0.99597 0.0040 0.99550 0.0045	FN 3 0.00232 0 0.00180 0.00025	TP/Recall 0.99768 0.99820 0.99975	<u>Precision</u> 0.69234	0.98710 0.98671	<b>FP</b> 0.01290 0.01329	versarial FN 0.01632 0.01550 0.00764	TP/Recall 0.98368 0.98450	<u>Precision</u> 0.70672	TN FP	E00% Adve FN 0.07356 0.07302 0.02179	rsarial TP/Recall 0.92644 0.92698 0.97821	Precision
ndom Forest M Classifier earest Neighbors semble  ox timed odel nary Dense nary LSTM ndom Forest M Classifier earest Neighbors semble hitebox Predict	TN 1 0.92600 0.93372	EP 0.07400 0.06628	ersarial FN 0.00200 0.00492  0.00061  ersarial FN	TP/Recall 0.99800 0.99508 0.99939	<u>Precision</u> 0.49309	TN FP 0.99597 0.0040 0.99550 0.0045	I NOT TRA FN 3 0.00232 0 0.00180 0.00025	INING SET TP/Recall 0.99768 0.99820 0.99975 INING SET TP/Recall	<u>Precision</u> 0.69234	0.98710 0.98671	60.01290 0.01329 0.01329	versarial FN 0.01632 0.01550 0.00764 versarial	TP/Recall 0.98368 0.98450 0.99236	<u>Precision</u> 0.70672	TN FP	E00% Adve FN 0.07356 0.07302 0.02179	rsarial TP/Recall 0.92644 0.92698 0.97821 rsarial	1.00000
andom Forest //M Classifier nearest Neighbors nsemble  Doox timed nodel nary LSTM andom Forest //M Classifier nearest Neighbors nsemble  hitebox Predict odel nary Dense	TN 9.0.92600 0.93372	EP 0.07400 0.06628 25% Adv	ersarial FN 0.00200 0.00492  0.00061  ersarial FN 0.02642	TP/Recall 0.99800 0.99508 0.99939 TP/Recall 0.97358	<u>Precision</u> 0.49309	TN FP 0.99597 0.0040 0.99550 0.0045 50% Adversaria TN FP	0.00025  I NOT TRA  FN  0.00180  0.00025  I NOT TRA  FN  3 0.01311	1NING SET TP/Recall 0.99768 0.99820 0.99975 INING SET TP/Recall 0.98689	<u>Precision</u> 0.69234	0.98710 0.98671 TN 0.98005	75% Ad	versarial FN 0.01632 0.01550  0.00764  versarial FN 0.02364	TP/Recall 0.98368 0.98450 0.99236 TP/Recall 0.97636	<u>Precision</u> 0.70672	TN FP	0.07356 0.07302 0.02179	rsarial  TP/Recall  0.92644  0.92698  0.97821  rsarial  TP/Recall	1.00000
nary LSTM andom Forest //M Classifier nearest Neighbors nsemble  Doox timed Oodel nary Dense nary LSTM andom Forest //M Classifier nearest Neighbors nsemble  //hitebox Predict Iodel nary Dense nary LSTM andom Forest	TN 9.0.92600 0.93372 1.0.9	25% Adv 0.12843	ersarial FN 0.00200 0.00492  0.00061  ersarial FN 0.02642	TP/Recall 0.99800 0.99508 0.99939 TP/Recall 0.97358	<u>Precision</u> 0.49309	TN FP 0.99597 0.0040 0.99550 0.0045  50% Adversaria TN FP 0.97537 0.0246	0.00025  I NOT TRA  FN  0.00180  0.00025  I NOT TRA  FN  3 0.01311	1NING SET TP/Recall 0.99768 0.99820 0.99975 INING SET TP/Recall 0.98689	<u>Precision</u> 0.69234	0.98710 0.98671 TN 0.98005	75% Ad FP 0.01290 0.01329	versarial FN 0.01632 0.01550  0.00764  versarial FN 0.02364	TP/Recall 0.98368 0.98450 0.99236 TP/Recall 0.97636	<u>Precision</u> 0.70672	TN FP	0.07356 0.07302 0.02179 0.02179	rsarial  TP/Recall  0.92644 0.92698  0.97821  rsarial  TP/Recall 0.92571	1.00000
andom Forest //M Classifier nearest Neighbors nsemble  Doox timed Doos timed nary Dense nary LSTM Indom Forest //M Classifier nearest Neighbors nsemble  hitebox Predict Dodel nary Dense nary LSTM hitebox Predict Dodel nary Dense nary LSTM nary Dense nary LSTM nary Dense nary LSTM nary Dense nary LSTM nary Dense	TN 9.0.92600 0.93372 1.0.9	25% Adv 0.12843	ersarial FN 0.00200 0.00492  0.00061  ersarial FN 0.02642	TP/Recall 0.99800 0.99508 0.99939 TP/Recall 0.97358	<u>Precision</u> 0.49309	TN FP 0.99597 0.0040 0.99550 0.0045  50% Adversaria TN FP 0.97537 0.0246	0.00025  I NOT TRA  FN  0.00180  0.00025  I NOT TRA  FN  3 0.01311	1NING SET TP/Recall 0.99768 0.99820 0.99975 INING SET TP/Recall 0.98689	<u>Precision</u> 0.69234	0.98710 0.98671 TN 0.98005	75% Ad FP 0.01290 0.01329	versarial FN 0.01632 0.01550  0.00764  versarial FN 0.02364	TP/Recall 0.98368 0.98450 0.99236 TP/Recall 0.97636	<u>Precision</u> 0.70672	TN FP	0.07356 0.07302 0.02179 0.02179	rsarial  TP/Recall  0.92644 0.92698  0.97821  rsarial  TP/Recall 0.92571	1.00000
andom Forest //M Classifier nearest Neighbors nsemble  Doox timed Doox timed Nodel nary Dense nary LSTM Andom Forest //M Classifier nearest Neighbors nsemble  Thitebox Predict  Indel Inary Dense Inary Mandam Forest Inary Dense Inary Dense Inary LSTM	TN 9.0.92600 0.93372 1.0.9372 1.0.9372 1.0.9372 1.0.9372 1.0.9372 1.0.9372 1	25% Adv 0.12843	ersarial FN 0.00200 0.00492  0.00061  ersarial FN 0.02642	TP/Recall 0.99800 0.99508 0.99939 TP/Recall 0.97358	<u>Precision</u> 0.49309	TN FP 0.99597 0.0040 0.99550 0.0045  50% Adversaria TN FP 0.97537 0.0246	0.00025  I NOT TRA  FN  0.00180  0.00025  I NOT TRA  FN  3 0.01311	1NING SET TP/Recall 0.99768 0.99820 0.99975 INING SET TP/Recall 0.98689	<u>Precision</u> 0.69234	0.98710 0.98671 TN 0.98005	75% Ad FP 0.01290 0.01329	versarial FN 0.01632 0.01550  0.00764  versarial FN 0.02364	TP/Recall 0.98368 0.98450 0.99236 TP/Recall 0.97636	<u>Precision</u> 0.70672	TN FP	0.07356 0.07302 0.02179 0.02179	rsarial  TP/Recall  0.92644 0.92698  0.97821  rsarial  TP/Recall 0.92571	1.00000

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JOE'S ENVIRONMENT	1					1			ı					İ	l			
WB Random Attack		25% Adve	ersarial			50% Adversa	ial NOT TRA	INING SET			75% Ad	versarial			1	00% Adve	ersarial	
Model	TN F	:P		TP/Recall	Precision	TN FP	FN	TP/Recall	Precision	TN	FP	FN	TP/Recall	Precision	TN FP		TP/Recall	Precision
Binary Dense	0.93753	0.06247	0.06068	0.93932		0.97777 0.022	23 0.02342	0.97658		0.98712	0.01288	0.01632	0.98368			0.02257	0.97743	
Binary LSTM	0.92522	0.07478	0.06832	0.93168		0.97623 0.023	77 0.02463	0.97537		0.98499	0.01501	0.01598	0.98402			0.03443	0.96557	
Random Forest	0.88441	0.11559	0.10042	0.89958		0.96453 0.035	47 0.03841	0.96159		0.98437	0.01563	0.02390	0.97610			0.02177	0.97823	
SVM Classifier	0.70937	0.29063	0.30437	0.69563		0.84881 0.151	19 0.17641	0.82359		0.91133	0.08867	0.10609	0.89391			0.08828	0.91172	
Knearest Neighbors	0.68448	0.31552	0.32277	0.67723		0.79102 0.208	98 0.22997	0.77003		0.83887	0.16113	0.20936	0.79064			0.23673	0.76327	
nsemble			0.04221	0.95779	0.60958		0.01455	0.98531	0.85804			0.00957	0.99043	0.94597		0.02025	0.97975	1.00000
WB Strategic-Timed Atta		25% Adve	ersarial			50% Adversa	ial <u>NOT</u> TRA	INING SET	I		75% Ad	versarial			1	00% Adve	ersarial	
Model	TN F	: <u>P</u>	<u>FN</u>	TP/Recall	Precision	TN FP	FN	TP/Recall	Precision	<u>TN</u>	<u>FP</u>	FN	TP/Recall	Precision	TN FP	<u>FN</u>	TP/Recall	Precision
Binary Dense	0.98126	0.01874	0.03587	0.96413		0.97918 0.020	82 0.03870			0.96831	0.03169	0.03505				0.03445		
Sinary LSTM	0.97612	0.02388	0.02871	0.97129		0.97438 0.025	62 0.03155	0.96845		0.96433	0.03567	0.02668	0.97332			0.01785	0.98215	
Random Forest	0.98397	0.01603	0.08568	0.91432		0.97781 0.022	19 0.08834	0.91166		0.95148	0.04852	0.06492	0.93508			0.03575	0.96425	
SVM Classifier	0.96503	0.03497	0.23447	0.76553		0.94904 0.050	96 0.20922	0.79078		0.89941	0.10059	0.15657	0.84343			0.09038	0.90962	
nearest Neighbors	0.90830	0.09170	0.20169	0.79831						0.84421	0.15579	0.17602	0.82398			0.13229	0.86771	
nsemble			0.01693	0.98307	0.63904		0.01820	0.98180	0.85570			0.01544	0.95370	0.99097		0.01021	0.98979	1.00000
																		_
Bbox prediction		25% Adve				50% Adversa						versarial				00% Adve		
<u>Model</u>	<u>TN</u> F	<u> </u>		TP/Recall	Precision	<u>TN FP</u>	<u>FN</u>	TP/Recall	Precision			FN	TP/Recall	Precision	TN FP			Precision
inary Dense	0.82195	0.17805	0.06191	0.93809		0.90504 0.094					0.04589	0.06613				0.05643		
nary LSTM	0.84537	0.15463	0.11212	0.88788		0.90858 0.091	42 0.10712	0.89288		0.95154	0.04846	0.08359	0.91641			0.06099	0.93901	
andom Forest																		
/M Classifier																		
earest Neighbors																		
semble			0.07799	0.92201	0.55288		0.07666	0.92334	0.82688			0.06083	0.93917	0.95071		0.04381	0.95619	1.00000
box random		25% Adve	ersarial			50% Adversa	ial NOT TRA	INING SET	Ī		75% Ad	versarial			1	00% Adve	ersarial	
<u>Model</u>	TN F	<u>:P</u>	<u>FN</u>	TP/Recall	Precision	TN FP	FN	TP/Recall	Precision	<u>TN</u>	<u>FP</u>	<u>FN</u>	TP/Recall	Precision	TN FP	<u>FN</u>	TP/Recall	Precision
inary Dense	0.93287	0.06713	0.03291	0.96709		0.96343 0.036	57 0.01947	0.98053		0.97198	0.02802	0.01589	0.98411			0.02592	0.97408	
nary LSTM	0.94200	0.05800	0.04782	0.95218		0.96902 0.030	98 0.02573	0.97427		0.97869	0.02131	0.01972	0.98028			0.02347	0.97653	
andom Forest																		
/M Classifier																		
earest Neighbors																		
semble			0.02861	0.97139	0.61871		0.01569	0.98431	0.84578			0.01182	0.98818	0.94094		0.01348	0.98652	1.00000
oox timed		25% Adve	rearial			50% Adversa	ial NOT TRA	INING SET	T		75% Ad	versarial			1	00% Adve	arcarial	
/lodel	TN F	:P		TP/Recall	Precision	TN FP	FN		Precision	TN	FP	FN	TP/Recall	Precision				Precision
inary Dense	0.98573	0.01427		0.98245		0.98182 0.018					0.02525	0.06752				0.10125		
nary LSTM	0.98847		0.01564	0.98436		0.98593 0.014					0.02067	0.05971				0.08025		
indom Forest	1																	
HUUHH FUIEST																		
						1												
M Classifier																		
M Classifier earest Neighbors			0.00866	0.99134	0.62186		0.01642	0.98358	0.83620			0.03314	0.96686	0.94423		0.04472	0.95528	1.00000
'M Classifier learest Neighbors			0.00866	0.99134	0.62186		0.01642	0.98358	0.83620			0.03314	0.96686	0.94423		0.04472	0.95528	1.00000
/M Classifier nearest Neighbors nsemble		25% Adve		0.99134	0.62186	50% Adversa			0.83620		75% Ad	0.03314 versarial	0.96686	0.94423	1	0.04472 00% Adve		1.00000
/M Classifier nearest Neighbors nsemble /hitebox Predict	IN F	25% Adve	ersarial	0.99134 TP/Recall		50% Adversa				TN			0.96686  TP/Recall		1 TN FP	00% Adve	ersarial	1.00000 Precision
VM Classifier nearest Neighbors nsemble Vhitebox Predict	<u>TN</u> <u>F</u> 0.82278		ersarial				ial <u>NOT</u> TRA	INING SET		TN 0.95442	<u>FP</u>	versarial	TP/Recall			00% Adve	ersarial TP/Recall	
VM Classifier nearest Neighbors nsemble Vhitebox Predict 10del inary Dense		: <u>P</u>	ersarial <u>FN</u>	TP/Recall		<u>TN FP</u>	ial <u>NOT</u> TRA <u>FN</u> 37 0.07155	TP/Recall 0.92845		0.95442	<u>FP</u>	versarial FN 0.06678	<b>TP/Recall</b> 0.93322			00% Adve	ersarial TP/Recall 0.94380	
andom Forest VM Classifier nearest Neighbors nsemble Whitebox Predict Model inary Dense inary LSTM andom Forest	0.82278	0.17722	ersarial FN 0.06123	<b>TP/Recall</b> 0.93877		TN FP 0.90563 0.094	ial <u>NOT</u> TRA <u>FN</u> 37 0.07155	TP/Recall 0.92845		0.95442	<u>FP</u> 0.04558	versarial FN 0.06678	<b>TP/Recall</b> 0.93322			00% Adve	ersarial TP/Recall 0.94380	
VM Classifier nearest Neighbors nsemble  Vhitebox Predict lodel inary Dense inary LSTM	0.82278	0.17722	ersarial FN 0.06123	<b>TP/Recall</b> 0.93877		TN FP 0.90563 0.094	ial <u>NOT</u> TRA <u>FN</u> 37 0.07155	TP/Recall 0.92845		0.95442	<u>FP</u> 0.04558	versarial FN 0.06678	<b>TP/Recall</b> 0.93322			00% Adve	ersarial TP/Recall 0.94380	
/M Classifier nearest Neighbors nsemble hitebox Predict odel nary Dense nary LSTM	0.82278	0.17722	ersarial FN 0.06123 0.10879	<b>TP/Recall</b> 0.93877	Precision	TN FP 0.90563 0.094 0.90158 0.098	FN	TP/Recall 0.92845	Precision	0.95442	<u>FP</u> 0.04558	versarial FN 0.06678 0.08263	<b>TP/Recall</b> 0.93322	Precision		00% Adve	ersarial TP/Recall 0.94380	

The   P																				
No.   Procession   18   Proc																				
ae de 0.92493	ank's Env		25% Adv	ersarial			50% Adv	versarial	NOT TRAI	NING SET			75% Ad	versarial						
Method	/B Random					<u>Precision</u>					<u>Precision</u>					<u>Precision</u>	TN FP			Precision
Procedity   Company   Co	nary Dense																			
March   Marc	nary LSTM																			
Belghoof   18   18   18   18   18   18   18   1	ndom Forest																			
1	M Classifier																			
To   FP   FN	earest Neighbors	0.84657	0.15343				0.89349	0.10651				0.88990	0.11010							
The color   The	emble			0.04038	0.95962	0.51228			0.02558	0.97442	0.77540			0.02902	0.97098	0.90898		0.04178	0.95822	1.00000
See	3 Timed		25% Adv	ersarial			50% Adv	versarial	NOT TRAI	NING SET			75% Ad	versarial			1	.00% Adve	rsarial	
March   196536   0.03464   0.04611   0.95389   0.95145   0.04855   0.06701   0.93299   0.90132   0.09888   0.08341   0.91659   0.07933   0.89207	<u>odel</u>	TN F	: <u>P</u>	<u>FN</u>	TP/Recall	Precision	<u>TN</u>	<u>FP</u>	<u>FN</u>	TP/Recall	Precision	<u>TN</u>	<u>FP</u>	<u>FN</u>	TP/Recall	Precision	TN FP	<u>FN</u>	TP/Recall	Precision
Control   Cont	ary Dense	0.93966	0.06034	0.03004	0.96996		0.93804	0.06196	0.02903	0.97097		0.85792	0.14208	0.05488	0.94512			0.07571	0.92429	
Column   C	ary LSTM	0.96536	0.03464	0.04611	0.95389		0.95145	0.04855	0.06701	0.93299		0.90132	0.09868	0.08341	0.91659			0.10793	0.89207	
tell believe	ndom Forest																			
Column   C	Λ Classifier																			
Second   S	arest Neighbors																			
The Fig.   Fig	emble			0.02680	0.97320	0.54243			0.03861	0.96139	0.75738			0.04431	0.95569	0.88349		0.05419	0.94581	1.00000
The Fig.   Fig	x Predict		25% Adv	ersarial			50% Adv	versarial	NOT TRAI	NING SET			75% Ad	versarial		ī	1	00% Adve	rsarial	ī
See	<u>odel</u>	TN F			TP/Recall	Precision					Precision	TN			TP/Recall	Precision	_			Precision
Morest of the complete segments of the complet	nary Dense			0.05408				0.07895	0.11327			0.96162	0.03838	0.20119						
Descriptions   Company	ary LSTM																			
Company   Comp	dom Forest																			
Company   Comp	Л Classifier																			
Company   Comp	arest Neighbors																			
TN FP FN 1P/Recall Precision TN FP N 0.9454 0.05486 0.04245 0.95755 0.96385 0.03615 0.02255 0.97745 0.95824 0.04176 0.02682 0.97318 0.04170 0.95830 0.04170 0.94590 0.94590 0.94590 0.94590 0.96745 0.03255 0.03283 0.96717 0.96674 0.03326 0.03798 0.9602 0.95718 0.05720 0.94280 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.00000 0.00000 0.0000 0.00000 0.000000	emble		0.20294	0.03101	0.96899	0.40212		0.21762	0.06225	0.93775	0.72108		0.22916	0.12005	0.87995	0.91593		0.15950	0.84050	1.00000
TN FP FN 1P/Recall Precision TN FP N 0.9454 0.05486 0.04245 0.95755 0.96385 0.03615 0.02255 0.97745 0.95824 0.04176 0.02682 0.97318 0.04170 0.95830 0.04170 0.94590 0.94590 0.94590 0.94590 0.96745 0.03255 0.03283 0.96717 0.96674 0.03326 0.03798 0.9602 0.95718 0.05720 0.94280 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.00000 0.00000 0.0000 0.00000 0.000000																				
See																_				
Morest file relighbors    No.    k Random			ersarial				versarial	<u>NOT</u> TRAI					versarial			_				
Company   Comp	<u>lel</u>		: <u>P</u>	<u>FN</u>		Precision	<u>TN</u>	<u>FP</u>	FN	TP/Recall	Precision		<u>FP</u>	FN		Precision	_	<u>FN</u>	TP/Recall	Precision
file eighbors   0.24179   0.03166   0.96834   0.52107   0.23821   0.01874   0.98126   0.78381   0.24601   0.02150   0.97850   0.91354   0.03297   0.96703   1.00000	el ry Dense	0.94514	0.05486	<b>FN</b> 0.04245	0.95755	Precision	<u>TN</u> 0.96385	<b>FP</b> 0.03615	<u>FN</u> 0.02255	<b>TP/Recall</b> 0.97745	Precision	0.95824	<b>FP</b> 0.04176	FN 0.02682	0.97318	Precision	_	<b>FN</b> 0.04170	TP/Recall 0.95830	Precision
Predict   Predict   Precision   Precisio	<mark>lel</mark> ry Dense ry LSTM	0.94514	0.05486	<b>FN</b> 0.04245	0.95755	Precision	<u>TN</u> 0.96385	<b>FP</b> 0.03615	<u>FN</u> 0.02255	<b>TP/Recall</b> 0.97745	Precision	0.95824	<b>FP</b> 0.04176	FN 0.02682	0.97318	Precision	_	<b>FN</b> 0.04170	TP/Recall 0.95830	Precision
Company   Comp	del Iry Dense Iry LSTM dom Forest	0.94514	0.05486	<b>FN</b> 0.04245	0.95755	Precision	<u>TN</u> 0.96385	<b>FP</b> 0.03615	<u>FN</u> 0.02255	<b>TP/Recall</b> 0.97745	Precision	0.95824	<b>FP</b> 0.04176	FN 0.02682	0.97318	Precision	_	<b>FN</b> 0.04170	TP/Recall 0.95830	Precision
TN   FP   FN   TP/Recall   Precision   TN   FP   FN   TP/Recall   Precision   TN   FP   FN   TP/Recall   Precision   TN   FP   TP/Recall   Precision   TN   FP   TP/Recall   Precision   TN   TP/Recall   TP/Recall   TN   TP/Recall   TN   TP/Recall	l <u>el</u> ry Dense ry LSTM dom Forest I Classifier	0.94514	0.05486	<b>FN</b> 0.04245	0.95755	Precision	<u>TN</u> 0.96385	<b>FP</b> 0.03615	<u>FN</u> 0.02255	<b>TP/Recall</b> 0.97745	Precision	0.95824	<b>FP</b> 0.04176	FN 0.02682	0.97318	Precision	_	<b>FN</b> 0.04170	TP/Recall 0.95830	Precision
TN   FP   FN   TP/Recall   Precision   TN   TP/Recall   Precisio	el ry Dense ry LSTM Iom Forest Classifier rest Neighbors	0.94514	0.05486 0.05258	FN 0.04245 0.05410	0.95755 0.94590		<u>TN</u> 0.96385 0.96745	FP 0.03615 0.03255	<u>FN</u> 0.02255 0.03283	TP/Recall 0.97745 0.96717		0.95824	<u>FP</u> 0.04176 0.03326	FN 0.02682 0.03798	0.97318 0.96202		_	<u>FN</u> 0.04170 0.05720	TP/Recall 0.95830 0.94280	
TN   FP   FN   TP/Recall   Precision   TN   TP/Recall   Precisio	del Iry Dense Iry LSTM dom Forest I Classifier arest Neighbors	0.94514	0.05486 0.05258	FN 0.04245 0.05410	0.95755 0.94590		<u>TN</u> 0.96385 0.96745	FP 0.03615 0.03255	<u>FN</u> 0.02255 0.03283	TP/Recall 0.97745 0.96717		0.95824	<u>FP</u> 0.04176 0.03326	FN 0.02682 0.03798	0.97318 0.96202		_	<u>FN</u> 0.04170 0.05720	TP/Recall 0.95830 0.94280	
Se	del ary Dense ary LSTM ndom Forest of Classifier earest Neighbors emble	0.94514	0.05486 0.05258 0.24179	EN 0.04245 0.05410 0.03166	0.95755 0.94590		TN 0.96385 0.96745	FP 0.03615 0.03255 0.23821	FN 0.02255 0.03283 0.01874	1P/Recall 0.97745 0.96717 0.98126		0.95824	60.04176 0.03326 0.24601	FN 0.02682 0.03798 0.02150	0.97318 0.96202		TN FP	FN 0.04170 0.05720 0.03297	TP/Recall 0.95830 0.94280 0.96703	
M 0.98278 0.01722 0.02107 0.97893 0.097868 0.02132 0.04779 0.95221 0.97153 0.02847 0.08025 0.91975 0.11805 0.88195    O.98278	del ary Dense ary LSTM dom Forest d Classifier arest Neighbors emble x Timed	0.94514 0.94742	0.05486 0.05258 0.24179	0.04245 0.05410 0.03166	0.95755 0.94590 0.96834	0.52107	TN 0.96385 0.96745	FP 0.03615 0.03255 0.23821 versarial	0.02255 0.03283 0.01874	TP/Recall 0.97745 0.96717 0.98126 NING SET	0.78381	0.95824 0.96674	60.04176 0.03326 0.24601 75% Ad	FN 0.02682 0.03798 0.02150 versarial	0.97318 0.96202 0.97850	0.91354	TN FP	0.04170 0.05720 0.03297	TP/Recall	1.00000
Predict 25% Adversarial Solve    del Iry Dense Iry LSTM dom Forest I Classifier arest Neighbors emble x Timed	0.94514 0.94742 TN F	0.05486 0.05258 0.24179 25% Adve	0.04245 0.05410 0.03166 ersarial	0.95755 0.94590 0.96834 TP/Recall	0.52107	TN 0.96385 0.96745 50% Adv	0.03615 0.03255 0.23821 versarial FP	0.02255 0.03283 0.01874 NOT TRAI	TP/Recall	0.78381	0.95824 0.96674	0.04176 0.03326 0.24601 75% Ad	FN 0.02682 0.03798 0.02150 versarial FN	0.97318 0.96202 0.97850	0.91354	TN FP	0.04170 0.05720 0.03297 0.03297	0.95830 0.94280 0.96703 rsarial	1.00000	
Fredict 25% Adversarial 50% Adversarial NOT TRAINING SET 75% Adversarial 75% A	el ry Dense ry LSTM lom Forest Classifier urest Neighbors mble c Timed el ry Dense	0.94514 0.94742 TN F 0.97990	0.05486 0.05258 0.24179 25% Adverse 0.02010	0.04245 0.05410 0.03166 ersarial FN 0.02065	0.95755 0.94590 0.96834 TP/Recall 0.97935	0.52107	TN 0.96385 0.96745 50% Adv TN 0.97309	0.03615 0.03255 0.23821 versarial FP 0.02691	0.02255 0.03283 0.01874 NOT TRAI FN 0.04889	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111	0.78381	0.95824 0.96674 TN 0.96310	0.04176 0.03326 0.24601 75% Ad FP 0.03690	0.02682 0.03798 0.02150 versarial FN 0.07899	0.97318 0.96202 0.97850 TP/Recall 0.92101	0.91354	TN FP	0.04170 0.05720 0.03297 0.0% Adve FN 0.13270	1P/Recall 0.95830 0.94280 0.96703 rsarial 1P/Recall 0.86730	1.00000
Predict 25% Adversarial Precision TN FP FN TP/Recall Precision TN FP FN TP/Recall Precision TN FP N 0.88455 0.15135 0.14802 0.88518 0.88556 0.11444 0.11060 0.88495 0.88920 0.886708 0.	del ary Dense ary LSTM dom Forest I Classifier arest Neighbors emble x Timed del ary Dense ary LSTM	0.94514 0.94742 TN F 0.97990	0.05486 0.05258 0.24179 25% Adverse 0.02010	0.04245 0.05410 0.03166 ersarial FN 0.02065	0.95755 0.94590 0.96834 TP/Recall 0.97935	0.52107	TN 0.96385 0.96745 50% Adv TN 0.97309	0.03615 0.03255 0.23821 versarial FP 0.02691	0.02255 0.03283 0.01874 NOT TRAI FN 0.04889	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111	0.78381	0.95824 0.96674 TN 0.96310	0.04176 0.03326 0.24601 75% Ad FP 0.03690	0.02682 0.03798 0.02150 versarial FN 0.07899	0.97318 0.96202 0.97850 TP/Recall 0.92101	0.91354	TN FP	0.04170 0.05720 0.03297 0.0% Adve FN 0.13270	1P/Recall 0.95830 0.94280 0.96703 rsarial 1P/Recall 0.86730	1.00000
Predict 25% Adversarial 50% Adversarial NOT TRAINING SET 75% Adversarial Precision TN FP FN TP/Recall Precision TN FP NOT TP/Recall Precision TN TRAINING SET 0.8845 0.15135 0.14802 0.85198 0.84857 0.15643 0.11080 0.88920 0.88920 0.88636 0.13364 0.9928 0.90072 0.86636 0.13364 0.9928 0.90072 0.11710 0.88290 0.88181 0.27840 0.9008 0.90072 0.89833 0.05601 0.94399 1.00000 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.900820 0.90072 0.9008 0.90072 0.9008 0.90072 0.9008 0.90072 0.900820 0.90072 0.900820 0.90072 0.900820 0.90072 0.900820 0.9008	del rry Dense rry LSTM dom Forest I Classifier arest Neighbors emble x Timed del rry Dense rry LSTM dom Forest	0.94514 0.94742 TN F 0.97990	0.05486 0.05258 0.24179 25% Adverse 0.02010	0.04245 0.05410 0.03166 ersarial FN 0.02065	0.95755 0.94590 0.96834 TP/Recall 0.97935	0.52107	TN 0.96385 0.96745 50% Adv TN 0.97309	0.03615 0.03255 0.23821 versarial FP 0.02691	0.02255 0.03283 0.01874 NOT TRAI FN 0.04889	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111	0.78381	0.95824 0.96674 TN 0.96310	0.04176 0.03326 0.24601 75% Ad FP 0.03690	0.02682 0.03798 0.02150 versarial FN 0.07899	0.97318 0.96202 0.97850 TP/Recall 0.92101	0.91354	TN FP	0.04170 0.05720 0.03297 0.0% Adve FN 0.13270	1P/Recall 0.95830 0.94280 0.96703 rsarial 1P/Recall 0.86730	1.00000
Predict 25% Adversarial	del ary Dense ary LSTM dom Forest 1 Classifier arest Neighbors emble  x Timed del ary Dense ary LSTM dom Forest 1 Classifier	0.94514 0.94742 TN F 0.97990	0.05486 0.05258 0.24179 25% Adverse 0.02010	0.04245 0.05410 0.03166 ersarial FN 0.02065	0.95755 0.94590 0.96834 TP/Recall 0.97935	0.52107	TN 0.96385 0.96745 50% Adv TN 0.97309	0.03615 0.03255 0.23821 versarial FP 0.02691	0.02255 0.03283 0.01874 NOT TRAI FN 0.04889	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111	0.78381	0.95824 0.96674 TN 0.96310	0.04176 0.03326 0.24601 75% Ad FP 0.03690	0.02682 0.03798 0.02150 versarial FN 0.07899	0.97318 0.96202 0.97850 TP/Recall 0.92101	0.91354	TN FP	0.04170 0.05720 0.03297 0.0% Adve FN 0.13270	1P/Recall 0.95830 0.94280 0.96703 rsarial 1P/Recall 0.86730	1.00000
TN FP FN TP/Recall Precision TN FP FN 0.14802 0.85198 0.84855 0.1544 0.1545 0.84857 0.15643 0.15643 0.	ry Dense ry LSTM dom Forest I Classifier arest Neighbors emble  x Timed del ry Dense ry LSTM dom Forest I Classifier arest Neighbors	0.94514 0.94742 TN F 0.97990	0.05486 0.05258 0.24179 25% Advie: P 0.02010 0.01722	EN 0.04245 0.05410 0.03166 ersarial FN 0.02065 0.02107	0.95755 0.94590 0.96834 TP/Recall 0.97893 0.97893	0.52107 Precision	50% Adv TN 0.96385 0.96745 50% Adv TN 0.97309 0.97868	FP 0.03615 0.03255 0.23821 versarial FP 0.02691 0.02132	EN 0.02255 0.03283 0.01874 NOT TRAI FN 0.04889 0.04779	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111 0.95221	0.78381 Precision	0.95824 0.96674 TN 0.96310	FP 0.04176 0.03326 0.24601 75% Ad FP 0.03690 0.02847	0.02682 0.03798 0.02150 versarial FN 0.07899 0.08025	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975	0.91354 Precision	TN FP	EN 0.04170 0.05720 0.03297 0.0% Adve FN 0.13270 0.11805	0.95830 0.94280 0.96703 0.96703 rsarial TP/Recall 0.86730 0.88195	1.00000 Precision
se 0.84865 0.15135 0.14802 0.85198 0.88556 0.11444 0.13160 0.86840 0.90658 0.09342 0.12246 0.87754 0.14354 0.85646 0.80462 0.19538 0.13292 0.86708 0.84357 0.15643 0.11080 0.88920 0.86636 0.13364 0.90928 0.90072 0.11710 0.88290 0.8690s 0.8690s 0.8690s 0.86636 0.1364 0.90658 0.1364 0.90658 0.906	del ary Dense ary LSTM idom Forest id Classifier carest Neighbors emble  ox Timed del ary Dense ary LSTM idom Forest id Classifier carest Neighbors	0.94514 0.94742 TN F 0.97990	0.05486 0.05258 0.24179 25% Advie: P 0.02010 0.01722	EN 0.04245 0.05410 0.03166 ersarial FN 0.02065 0.02107	0.95755 0.94590 0.96834 TP/Recall 0.97893 0.97893	0.52107 Precision	50% Adv TN 0.96385 0.96745 50% Adv TN 0.97309 0.97868	FP 0.03615 0.03255 0.23821 versarial FP 0.02691 0.02132	EN 0.02255 0.03283 0.01874 NOT TRAI FN 0.04889 0.04779	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111 0.95221	0.78381 Precision	0.95824 0.96674 TN 0.96310	FP 0.04176 0.03326 0.24601 75% Ad FP 0.03690 0.02847	0.02682 0.03798 0.02150 versarial FN 0.07899 0.08025	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975	0.91354 Precision	TN FP	EN 0.04170 0.05720 0.03297 0.0% Adve FN 0.13270 0.11805	0.95830 0.94280 0.96703 0.96703 rsarial TP/Recall 0.86730 0.88195	1.00000 Precision
M 0.80462 0.19538 0.13292 0.86708 0.84357 0.15643 0.11080 0.88920 0.86636 0.13364 0.09928 0.90072 0.11710 0.88290 orest fier leighbors	del ary Dense ary LSTM idom Forest A Classifier arest Neighbors emble  ox Timed del ary Dense ary LSTM idom Forest A Classifier arest Neighbors emble	0.94514 0.94742 TN F 0.97990 0.98278	0.05486 0.05258 0.24179 25% Advi P 0.02010 0.01722 0.26664	0.04245 0.05410  0.03166 ersarial FN 0.02065 0.02107  0.01267 ersarial	0.95755 0.94590 0.96834 TP/Recall 0.97893 0.97893	0.52107 Precision	50% Adv 50% Adv 50% Adv 50% Adv	0.03615 0.03255 0.23821 versarial FP 0.02691 0.02132	FN 0.02255 0.03283 0.01874 NOT TRAIFN 0.04889 0.04779 0.02744	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111 0.95221	0.78381 Precision	0.95824 0.96674 TN 0.96310 0.97153	FP 0.04176 0.03326 0.24601 75% Add FP 0.03690 0.02847 0.27840	EN 0.02682 0.03798 0.02150 versarial FN 0.07899 0.08025 0.04236 versarial	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975	0.91354 Precision	IN FP	FN 0.04170 0.05720 0.03297 0.00% Adversion 0.13270 0.11805 0.05601 0.00% Adversion 0.00% Adver	0.95830 0.94280 0.96703 rsarial TP/Recall 0.86730 0.88195	1.00000 Precision
orest fier leighbors	del ary Dense ary LSTM idom Forest id Classifier arest Neighbors emble  ox Timed del ary Dense ary LSTM idom Forest id Classifier arest Neighbors emble  itebox Predict	0.94514 0.94742 TN F 0.97990 0.98278	0.05486 0.05258 0.24179 25% Advi P 0.02010 0.01722 0.26664	0.04245 0.05410  0.03166 ersarial FN 0.02065 0.02107  0.01267 ersarial	0.95755 0.94590 0.96834 TP/Recall 0.97935 0.97893	0.52107 Precision 0.55185	50% Adv 50% Adv 50% Adv 50% Adv	0.03615 0.03255 0.23821 versarial FP 0.02691 0.02132 0.27209 versarial	FN 0.02255 0.03283 0.01874 NOT TRAIFN 0.04889 0.04779 0.02744 NOT TRAIFN 0.01	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95111 0.95221  0.97256  NING SET	0.78381 Precision  0.77567	0.95824 0.96674 TN 0.96310 0.97153	FP 0.04176 0.03326 0.24601 75% Add FP 0.03690 0.02847 0.27840 75% Add	EN 0.02682 0.03798 0.02150 versarial FN 0.07899 0.08025 0.04236 versarial	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975	0.91354  Precision  0.89833	IN FP	FN 0.04170 0.05720 0.03297 0.00% Adversion 0.13270 0.11805 0.05601 0.00% Adversion 0.00% Adver	0.95830 0.94280 0.96703 rsarial TP/Recall 0.86730 0.88195 0.94399	1.00000 Precision
fier leighbors	del ary Dense ary LSTM idom Forest of Classifier earest Neighbors emble  ox Timed del ary Dense ary LSTM idom Forest of Classifier earest Neighbors emble  itebox Predict del	0.94514 0.94742 TN F 0.97990 0.98278	0.05486 0.05258 0.24179 25% Advi P 0.02010 0.01722 0.26664 25% Advi P	0.04245 0.05410 0.03166 ersarial FN 0.02065 0.02107 0.01267 ersarial FN	0.95755 0.94590 0.96834 TP/Recall 0.97935 0.97893 0.98733	0.52107 Precision 0.55185	50% Adv TN 0.97309 0.97868	FP 0.03615 0.03255 0.23821 versarial FP 0.02691 0.02132 0.27209 versarial FP	EN 0.02255 0.03283 0.01874 NOT TRAI FN 0.04889 0.04779 0.02744 NOT TRAI FN	TP/Recall	0.78381 Precision  0.77567	0.95824 0.96674 TN 0.96310 0.97153	FP 0.04176 0.03326 0.24601 75% Ad FP 0.03690 0.02847 0.27840 75% Ad FP	EN 0.02682 0.03798 0.02150 versarial EN 0.07899 0.08025 0.04236 versarial FN	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975 0.95764 TP/Recall	0.91354  Precision  0.89833	IN FP	FN 0.04170 0.05720 0.03297 0.00% Adverse FN 0.13270 0.11805 0.05601 0.00% Adverse FN	1P/Recall 0.95830 0.94280 0.96703 rsarial 1P/Recall 0.86730 0.88195 0.94399 rsarial 1P/Recall	1.00000 Precision
leighbors leighbors	adel ary Dense ary LSTM adom Forest W Classifier earest Neighbors emble  ox Timed adel ary Dense ary LSTM adom Forest W Classifier earest Neighbors emble  itel ary Dense ary LSTM adom Forest W Classifier earest Neighbors emble  itelbox Predict adel ary Dense	0.94514 0.94742 TN F 0.97990 0.98278	0.05486 0.05258 0.24179 25% Advi EP 0.02010 0.01722 0.26664 25% Advi EP 0.15135	0.03166 ersarial FN 0.02107 0.01267 ersarial FN 0.01267	0.95755 0.94590 0.96834 TP/Recall 0.97935 0.97893 0.98733 TP/Recall 0.85198	0.52107 Precision 0.55185	50% Add TN 0.97309 0.97868 50% Add TN 0.97309 0.97868	FP 0.03615 0.03255 0.23821 0.23821 FP 0.02691 0.02132 0.27209 versarial FP 0.11444	FN 0.02255 0.03283 0.01874 NOT TRAI FN 0.04889 0.04779 0.02744 NOT TRAI FN 0.13160	TP/Recall	0.78381 Precision  0.77567	0.95824 0.96674 TN 0.96310 0.97153	FP 0.04176 0.03326 0.24601 75% Ad FP 0.03690 0.02847 0.27840 75% Ad FP 0.09342	FN	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975 0.95764 TP/Recall 0.87754	0.91354  Precision  0.89833	IN FP	FN 0.04170 0.05720 0.03297 0.03297 0.13270 0.11805 0.05601 0.005601 0.00601 0.	0.95830 0.94280 0.96703 rsarial TP/Recall 0.86730 0.88195 0.94399 rsarial TP/Recall 0.85646	1.00000 Precision
	ox Random  del ary Dense ary LSTM dom Forest W Classifier earest Neighbors emble  ox Timed del ary Dense ary LSTM dom Forest W Classifier earest Neighbors emble  interpolation of the control of the con	0.94514 0.94742 TN F 0.97990 0.98278	0.05486 0.05258 0.24179 25% Advi EP 0.02010 0.01722 0.26664 25% Advi EP 0.15135	0.03166 ersarial FN 0.02107 0.01267 ersarial FN 0.01267	0.95755 0.94590 0.96834 TP/Recall 0.97935 0.97893 0.98733 TP/Recall 0.85198	0.52107 Precision 0.55185	50% Add TN 0.97309 0.97868 50% Add TN 0.97309 0.97868	FP 0.03615 0.03255 0.23821 0.23821 FP 0.02691 0.02132 0.27209 versarial FP 0.11444	FN 0.02255 0.03283 0.01874 NOT TRAI FN 0.04889 0.04779 0.02744 NOT TRAI FN 0.13160	TP/Recall	0.78381 Precision  0.77567	0.95824 0.96674 TN 0.96310 0.97153	FP 0.04176 0.03326 0.24601 75% Ad FP 0.03690 0.02847 0.27840 75% Ad FP 0.09342	FN	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975 0.95764 TP/Recall 0.87754	0.91354  Precision  0.89833	IN FP	FN 0.04170 0.05720 0.03297 0.03297 0.13270 0.11805 0.05601 0.005601 0.00601 0.	0.95830 0.94280 0.96703 rsarial TP/Recall 0.86730 0.88195 0.94399 rsarial TP/Recall 0.85646	1.00000 Precision
0.19198 0.09275 0.90725 0.45307 0.18820 0.07757 0.92243 0.74929 0.17277 0.06883 0.93117 0.90776 0.07749 0.92251 1.00000	del ary Dense ary LSTM idom Forest if Classifier earest Neighbors emble  ox Timed del ary Dense ary LSTM idom Forest if Classifier earest Neighbors emble  itebox Predict del ary Dense ary LSTM	0.94514 0.94742 TN F 0.97990 0.98278	0.05486 0.05258 0.24179 25% Advi EP 0.02010 0.01722 0.26664 25% Advi EP 0.15135	0.03166 ersarial FN 0.02107 0.01267 ersarial FN 0.01267	0.95755 0.94590 0.96834 TP/Recall 0.97935 0.97893 0.98733 TP/Recall 0.85198	0.52107 Precision 0.55185	50% Add TN 0.97309 0.97868 50% Add TN 0.97309 0.97868	FP 0.03615 0.03255 0.23821 0.23821 FP 0.02691 0.02132 0.27209 versarial FP 0.11444	FN 0.02255 0.03283 0.01874 NOT TRAI FN 0.04889 0.04779 0.02744 NOT TRAI FN 0.13160	TP/Recall	0.78381 Precision  0.77567	0.95824 0.96674 TN 0.96310 0.97153	FP 0.04176 0.03326 0.24601 75% Ad FP 0.03690 0.02847 0.27840 75% Ad FP 0.09342	FN	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975 0.95764 TP/Recall 0.87754	0.91354  Precision  0.89833	IN FP	FN 0.04170 0.05720 0.03297 0.03297 0.13270 0.11805 0.05601 0.005601 0.00601 0.	0.95830 0.94280 0.96703 rsarial TP/Recall 0.86730 0.88195 0.94399 rsarial TP/Recall 0.85646	1.00000 Precision
	el ry Dense ry LSTM lom Forest Classifier rest Neighbors mble  Timed el ry Dense ry LSTM lom Forest Classifier rest Neighbors mble  ebox Predict el ry Dense ry LSTM lom Forest Classifier rest Neighbors mble	0.94514 0.94742 TN F 0.97990 0.98278	0.05486 0.05258 0.24179 25% Advivipe 0.02010 0.01722 0.26664 25% Advivipe 0.15135 0.19538	EN 0.04245 0.05410 0.03166 ersarial FN 0.02065 0.02107 0.01267 ersarial FN 0.14802 0.13292	0.95755 0.94590 0.96834 TP/Recall 0.97935 0.97893 0.98733 TP/Recall 0.85198 0.86708	0.52107 Precision  0.55185 Precision	50% Adv 50% Adv TN 0.97309 0.97868 50% Adv TN 0.88556 0.88357	0.23821  versarial FP 0.02691 0.027209  versarial FP 0.11444 0.15643	EN 0.02255 0.03283 0.01874 NOT TRAI FN 0.04889 0.04779 0.02744 NOT TRAI FN 0.13160 0.11080	TP/Recall 0.97745 0.96717  0.98126  NING SET TP/Recall 0.95221  0.97256  NING SET TP/Recall 0.86840 0.88920	0.78381  Precision  0.77567  Precision	0.95824 0.96674 TN 0.96310 0.97153	FP 0.04176 0.03326  0.24601  75% Add FP 0.02847  0.27840  75% Add FPP 0.09342 0.13364	EN 0.02682 0.03798 0.02150 versarial FN 0.07899 0.08025 versarial FN 0.12246 0.09928	0.97318 0.96202 0.97850 TP/Recall 0.92101 0.91975 0.95764 TP/Recall 0.87754 0.90072	0.91354  Precision  0.89833  Precision	1 TN FP	EN 0.04170 0.05720 0.03297 0.03297 0.11805 0.05601 0.05601 0.14354 0.11710	0.95830 0.94280 0.96703 rsarial TP/Recall 0.86730 0.88195 0.94399 rsarial TP/Recall 0.85646 0.88290	1.00000 Precision  1.00000

ENSEMBLE	0.25	<u>0.5</u>	<u>0.75</u>	<u>1</u> ROU	J <b>ND</b> I FN		
<u>STARCRAFT</u>							
Whitebox Predict	0.02423	0.00938	0.00989	0.01575	2.42,0.94,0.99,1.57,		
Whitebox Random	0.02240	0.03693	0.07384	0.09940	2.24,3.69,7.38,9.94,	97.76,96.31,92.62,90.06	94.19
Whitebox Timed	0.01003	0.00003	0.00217	0.00016	1,0,0.22,0.02,	99,100,99.78,99.98	99.69
Blackbox Predict	0.01743	0.00608	0.00845	0.01609	1.74,0.61,0.85,1.61,	98.26,99.39,99.15,98.39	98.8
Blackbox Random	0.00946	0.00492	0.00312	0.00128	0.95,0.49,0.31,0.13,	99.05,99.51,99.69,99.87	99.53
Blackbox Timed	0.00061	0.00025	0.00764	0.02179	0.06,0.03,0.76,2.18,	99.94,99.97,99.24,97.82	99.24
ENSEMBLE MODEL	0.25000	<u>0.50000</u>	<u>0.75000</u>	1.00000			
<b>Cooperative Navigation Attacks</b>							
Whitebox Predict	0.07516	0.07567	0.05992	0.04338	7.52,7.57,5.99,4.34,	92.48,92.43,94.01,95.66	93.65
Whitebox Random	0.04221	0.01455	0.00957	0.02025	4.22,1.45,0.96,2.02,	95.78,98.55,99.04,97.98	97.84
Whitebox Timed	0.01693	0.01820	0.01544	0.01021	1.69,1.82,1.54,1.02,	98.31,98.18,98.46,98.98	98.48
Blackbox Predict	0.07799	0.07666	0.06083	0.04381	7.8,7.67,6.08,4.38,	92.2,92.33,93.92,95.62	93.52
Blackbox Random	0.02861	0.01569	0.01182	0.01348	2.86,1.57,1.18,1.35,	97.14,98.43,98.82,98.65	98.26
Blackbox Timed	0.00866	0.01642	0.03314	0.04472	0.87,1.64,3.31,4.47,	99.13,98.36,96.69,95.53	97.43
	<u>0.25000</u>	<u>0.50000</u>	<u>0.75000</u>	1.00000			
Physical Deception Attacks							
Whitebox Predict	0.09275	0.07757	0.06883	0.07749	9.27,7.76,6.88,7.75,	90.73,92.24,93.12,92.25	92.08
Whitebox Random	0.04038	0.02558	0.02902	0.04178	4.04,2.56,2.9,4.18,	95.96,97.44,97.1,95.82	96.58
Whitebox Timed	0.02680	0.03861	0.04431	0.05419	2.68,3.86,4.43,5.42,	97.32,96.14,95.57,94.58	95.9
Blackbox Predict	0.03101	0.06225	0.12005	0.15950	3.1,6.23,12,15.95,	96.9,93.77,88,84.05	90.68
Blackbox Random	0.03166	0.01874	0.02150	0.03297	3.17,1.87,2.15,3.3,	96.83,98.13,97.85,96.7	97.38
Blackbox Timed	0.01267	0.02744	0.04236	0.05601	1.27,2.74,4.24,5.6,	98.73,97.26,95.76,94.4	96.54
DENSE	0.35000	0.50000	0.75000	1.00000			
STARCRAFT	<u>0.25000</u>	<u>0.50000</u>	<u>0.75000</u>	1.00000			
Whitebox Predict	0.02642	0.01311	0.02364	0.07429	2.64,1.31,2.36,7.43,	07 26 09 60 07 64 02 57	96.56
Whitebox Predict Whitebox Random	0.02642	0.01311	0.02364	0.25171	3.57,6.81,15.94,25.17,	97.36,98.69,97.64,92.57 96.43,93.19,84.06,74.83	96.56 87.13
Whitebox Timed	0.00846	0.00051	0.13941	0.00153	0.85,0.05,3.99,0.15,	99.15,99.95,96.01,99.85	98.74
Blackbox Predict	0.05493	0.00031	0.02944	0.06882	5.49,2.44,2.94,6.88,	94.51,97.56,97.06,93.12	95.56
Blackbox Random	0.03583	0.02443	0.02343	0.00882	3.58,2.27,2.34,2.51,	96.42,97.73,97.66,97.49	97.32
Blackbox Timed	0.00200	0.00232	0.01632	0.07356	0.2,0.23,1.63,7.36,	99.8,99.77,98.37,92.64	97.65
Diddit on Timed	0.00200	0.00252	0.01032	0.07.330	5.2,5.23,2.53,7.50,	33.0,33.11,30.31,32.04	37.03

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BINARY DENSE	<u>0.25000</u>	<u>0.50000</u>	<u>0.75000</u>	<u>1.00000</u>			
<b>Cooperative Navigation Attacks</b>							
Whitebox Predict	0.06123	0.07155	0.06678	0.05620	6.12,7.15,6.68,5.62,	93.88,92.85,93.32,94.38	93.6
Whitebox Random	0.06068	0.02342	0.01632	0.02257	6.07,2.34,1.63,2.26,	93.93,97.66,98.37,97.74	96.9
Whitebox Timed	0.03587	0.03870	0.03505	0.03445	3.59,3.87,3.5,3.44,	96.41,96.13,96.5,96.56	96.
Blackbox Predict	0.06191	0.07138	0.06613	0.05643	6.19,7.14,6.61,5.64,	93.81,92.86,93.39,94.36	93.
Blackbox Random	0.03291	0.01947	0.01589	0.02592	3.29,1.95,1.59,2.59,	96.71,98.05,98.41,97.41	97.6
Blackbox Timed	0.01755	0.03169	0.06752	0.10125	1.75,3.17,6.75,10.13,	98.25,96.83,93.25,89.88	94.5
	<u>0.25000</u>	<u>0.50000</u>	<u>0.75000</u>	1.00000			
Physical Deception Attacks							
Whitebox Predict	0.14802	0.13160	0.12246	0.14354		85.2,86.84,87.75,85.65	86.3
Whitebox Random	0.06226	0.04377	0.04292	0.05456	6.23,4.38,4.29,5.46,	93.77,95.62,95.71,94.54	94.9
Whitebox Timed	0.03004	0.02903	0.05488	0.07571	3,2.9,5.49,7.57,	97,97.1,94.51,92.43	95.2
Blackbox Predict	0.05408	0.11327	0.20119	0.26626		94.59,88.67,79.88,73.37	84.1
Blackbox Random	0.04245	0.02255	0.02682	0.04170	4.24,2.25,2.68,4.17,	95.76,97.75,97.32,95.83	96.6
Blackbox Timed	0.02065	0.04889	0.07899	0.13270	2.07,4.89,7.9,13.27,	97.93,95.11,92.1,86.73	92.9
BINARY LSTM	<u>0.25000</u>	0.50000	0.75000	1.00000			
<u>STARCRAFT</u>							
Whitebox Predict	0.04701	0.02171	0.03535	0.06730	4.7,2.17,3.53,6.73,	95.3,97.83,96.47,93.27	95.7
Whitebox Random	0.04158	0.05840	0.18799	0.28558	4.16,5.84,18.8,28.56,	95.84,94.16,81.2,71.44	85.6
Whitebox Timed	0.02397	0.00033	0.02241	0.00177	2.4,0.03,2.24,0.18,	97.6,99.97,97.76,99.82	98.7
Blackbox Predict	0.03706	0.01657	0.02908	0.07303	3.71,1.66,2.91,7.3,	96.29,98.34,97.09,92.7	96.1
Blackbox Random	0.02777	0.01698	0.01865	0.03322	2.78,1.7,1.86,3.32,	97.22,98.3,98.14,96.68	97.5
Blackbox Timed	0.00492	0.00180	0.01550	0.07302	0.49,0.18,1.55,7.3,	99.51,99.82,98.45,92.7	97.6
BINARY LSTM	0.25000	<u>0.50000</u>	<u>0.75000</u>	1.00000			
Cooperative Navigation Attacks	0.40070	0.40536	0.00262	0.06400	10.00.10.54.0.26.5.1		00
Whitebox Predict	0.10879	0.10536	0.08263	0.06103	10.88,10.54,8.26,6.1,	89.12,89.46,91.74,93.9	91.0
Whitebox Random	0.06832	0.02463	0.01598	0.03443	6.83,2.46,1.6,3.44,	93.17,97.54,98.4,96.56	96.4
Whitebox Timed	0.02871	0.03155	0.02668	0.01785	2.87,3.16,2.67,1.79,	97.13,96.84,97.33,98.21	97.3
Blackbox Predict	0.11212	0.10712	0.08359	0.06099	11.21,10.71,8.36,6.1,	88.79,89.29,91.64,93.9	90.
Blackbox Random	0.04782	0.02573	0.01972	0.02347	4.78,2.57,1.97,2.35,	95.22,97.43,98.03,97.65	97.0
Blackbox Timed	0.01564	0.03078	0.05971	0.08025	1.56,3.08,5.97,8.03,	98.44,96.92,94.03,91.98	95.3

	0.25000	0.50000	<u>0.75000</u>	1.00000
<b>Physical Deception Attacks</b>				
Whitebox Predict	0.13292	0.11080	0.09928	0.11710
Whitebox Random	0.06729	0.04263	0.04769	0.06785
Whitebox Timed	0.04611	0.06701	0.08341	0.10793
Blackbox Predict	0.04617	0.09435	0.18714	0.25845
Blackbox Random	0.05410	0.03283	0.03798	0.05720
Blackbox Timed	0.02107	0.04779	0.08025	0.11805

13.29,11.08,9.93,11.71,	86.71,88.92,90.07,88.29	88.5
6.73,4.26,4.77,6.78,	93.27,95.74,95.23,93.22	94.36
4.61,6.7,8.34,10.79,	95.39,93.3,91.66,89.21	92.39
4.62,9.44,18.71,25.84,	95.38,90.56,81.29,74.16	85.35
5.41,3.28,3.8,5.72,	94.59,96.72,96.2,94.28	95.45
2.11,4.78,8.02,11.81,	97.89,95.22,91.98,88.19	93.32

Coopera	ative Navigation	
<b>Epsilon</b>	Success Replica	<b>Ensemble Undetected Positive Rate</b>
0.05	0.14014	0.16562
0.1	0.16608	0.31339
0.15	0.19421	0.42870
0.2	0.22815	0.49904
0.25	0.25330	0.54321
0.3	0.27484	0.57230
0.35	0.29093	0.58568
0.4	0.30675	0.58269
0.45	0.32012	0.56853
0.5	0.33322	0.55066
0.55	0.34763	0.52883
0.6	0.35950	0.51113
0.65	0.37515	0.48418
0.7	0.39063	0.46455
0.75	0.40426	0.44606
0.8	0.41920	0.42093
0.85	0.42966	0.40147
0.9	0.44101	0.38537
0.95	0.45323	0.37401
1	0.46132	0.35754

•	Deception	
Epsilon	Success Replica	<b>Ensemble Undetected Positive Rate</b>
0.05	0.13553	0.05595
0.1	0.14207	0.11348
0.15	0.15229	0.16352
0.2	0.16657	0.21610
0.25	0.18230	0.27408
0.3	0.19994	0.31457
0.35	0.21869	0.33723
0.4	0.24176	0.36118
0.45	0.26578	0.37417
0.5	0.29204	0.38699
0.55	0.31527	0.39165
0.6	0.33826	0.39051
0.65	0.35677	0.39396
0.7	0.37848	0.39266
0.75	0.39939	0.39309
0.8	0.41719	0.39258

0.85	0.43036	0.39299
0.9	0.44529	0.39595
0.95	0.45758	0.39194
1	0.46931	0.38861

StarCraf	t	
<b>Epsilon</b>	Success Replica	Ensemble Undetected Positive Rate
0.05	0.15736	0.16972
0.1	0.34374	0.22582
0.15	0.58152	0.20486
0.2	0.72332	0.21171
0.25	0.81122	0.22750
0.3	0.86858	0.24013
0.35	0.89077	0.26079
0.4	0.89932	0.28053
0.45	0.90191	0.30177
0.5	0.90249	0.31797
0.55	0.89634	0.33087
0.6	0.89413	0.33641
0.65	0.89154	0.33987
0.7	0.88846	0.34148
0.75	0.88452	0.34007
0.8	0.87780	0.33742
0.85	0.87405	0.33887
0.9	0.86560	0.32863
0.95	0.85974	0.32495
1	0.85378	0.31597

Navigation	25	%	50%		75	%	100	%	FN Rate	Average FN across Attack Rate by Attack
	Recall	Precision	Recall	Precision	Recall	Precision	Recall	Precision		
White Predict	0.795	0.510	0.818	0.804	0.864	0.945	0.912	1.000	20.51,18.19,13.64,8.78	0.847
White Random	0.544	0.470	0.823	0.835	0.952	0.944	0.966	1.000	45.63,17.75,4.83,3.45	0.821
White Timed	0.914	0.622	0.917	0.847	0.945	0.952	0.976	1.000	8.58,8.3,5.51,2.45	0.938
Black Predict	0.703	0.441	0.816	0.808	0.862	0.947	0.911	1.000	29.73,18.45,13.79,8.9	0.823
Black Random	0.526	0.468	0.772	0.811	0.906	0.936	0.911	1.000	47.42,20.32,9.38,8.9	0.785
Black Timed	0.873	0.591	0.880	0.820	0.884	0.939	0.897	1.000	12.72,12.05,11.59,10.33	0.883
Average Recall Acros	0.726	0.517	0.837	0.821	0.902	0.944	0.929	1.000	27.43.16.26.9.79.7.13	

Phys Deception	0.250		0.500		0.750		1.000			
	Recall	Precision	Recall	Precision	Recall	Precision	Recall	Precision		
White Predict	0.768	0.412	0.800	0.722	0.828	0.897	0.846	1.000	23.18,20.02,17.22,15.41	
White Random	0.717	0.440	0.789	0.737	0.852	0.898	0.871	1.000	28.28,21.09,14.83,12.91	
White Timed	0.799	0.493	0.790	0.720	0.818	0.867	0.852	1.000	20.06,20.98,8.3,14.76	
Black Predict	0.846	0.370	0.828	0.695	0.816	0.910	0.802	1.000	15.42,17.18,18.43,19.84	
Black Random	0.703	0.441	0.797	0.746	0.856	0.902	0.802	1.000	29.73,20.32,14.4,19.84	
Black Timed	0.821	0.506	0.812	0.743	0.824	0.884	0.802	1.000	17.91,18.82,17.58,19.84	
	0.776	0.444	0.803	0.727	0.832	0.893	0.829	1.000	22.43,19.74,16.78,17.1	

Starcraft	0.250		0.500		0.750		1.000			
	Recall	Precision	Recall	Precision	Recall	Precision	Recall	Precision		
White Predict	0.844	0.416	0.890	0.655	0.905	0.783	0.940	1.000	15.57,10.99,9.51,6	0.89
White Random	0.669	0.369	0.616	0.556	0.564	0.745	0.466	1.000	33.11,38.42,43.61,53.39	0.579
White Timed	0.723	0.449	0.719	0.676	0.687	0.894	0.338	1.000	27.67,28.14,31.29,66.19	0.617
Black Predict	0.860	0.416	0.888	0.652	0.871	0.775	0.892	1.000	13.98,11.22,12.92,10.75	0.878
Black Random	0.883	0.436	0.848	0.542	0.815	0.662	0.796	1.000	11.66,15.2,18.48,20.45	0.836
Black Timed	0.881	0.483	0.840	0.673	0.864	0.690	0.803	1.000	11.91,15.98,13.58,19.67	0.847
Average	0.810	0.428	0.800	0.626	0.784	0.758	0.706	1.000	18.98,19.99,21.57,29.41	