# Cooperative and distributed decision-making in a multi-agent perception system for improvised land mines detection –Extended Results–

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This document contains extended results intended to complement the work published in the main article *"Cooperative and distributed decision-making in a multi-agent perception system for improvised land mines detection"* where in depth indications on how to interpret the results are given together with a thorough analysis. A brief description of tables and figures can be found in the corresponding captions.

*Keywords:* land mine detection, improvised explosive device, neuroevolution, genetic fuzzy systems, feature extraction, sensor fusion

This document is structured as follows:

- section 1 gives futher numerical details on the GA parameter tuning pahse discussed in the main article;
- section 2 shows results obtained over the validation data set;
- section 3 shows results obtained over the validation data set.

Results are produced by means of the data available in [2] with the code downloadable from [5] as a part of the project [3].

### **1.** GAs parameter tuning

Population Size	$P_M$	$P_m$	$P_C$	$P_{C1}$	$P_{C2}$	$P_{C3}$	$P_{C4}$
50	0.2	0.1	0.7	0.2	0.2	0.3	0.3

Table 1: Optimal parameter setting for MGA with  $P_{C4}$  being the crossover activation probability for the added Two-Point Crossover [4] while the remaining parameters are the original ones from [1]. Optimal values were obtained empirically.

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$P_C^+$	0.1	0.4	0.7	0.3	0.2	0.1	0.3	0.2	0.1	0.3	0.2	0.1	:		
$P_C^{-}$	0.3	0.2	0.1	0.1	0.4	0.7	0.3	0.2	0.1	0.3	0.2	0.1			
$P_N^{+}$	0.3	0.2	0.1	0.3	0.2	0.1	0.1	0.4	0.7	0.3	0.2	0.1		• • •	
$P_N^-$	0.3	0.2	0.1	0.3	0.2	0.1	0.3	0.2	0.1	0.1	0.4	0.7			
				0.1	0.1	0.1	0.4	0.4	0.4	0.2	0.2	0.2	0.3	0.3	0.3
				0.1	0.4	0.4	0.1	0.1	0.4	0.2	0.3	0.3	0.2	0.2	0.3
		•••		0.4	0.1	0.4	0.1	0.4	0.1	0.3	0.2	0.3	0.2	0.3	0.2
				0.4	0.4	0.1	0.4	0.1	0.1	0.3	0.3	0.3	0.3	0.2	0.2

Table 2: NEAT GA fine-tuning process. This is the complete list of values (i.e. 24 for each parameter) tested to find the optimal parameter setting, used in the main article, for evolving the feed-forward neural networks. As indicated in the main article, different optimal configuration were found for NPDM, LDM and CDM.

# 2. Training phase

Sensor	LDM ( $\beta$ ) / NPDM ( $\alpha$ )	TP	TN	FP	FN	ACC	RMSE	AUC
	ffANN / RND	18	18	20	0	0.6429	0.4737	0.5263
VC	ffANN / FP	18	17	21	0	0.6250	0.4615	0.5385
v S	ffANN / ffANN	18	17	21	0	0.6250	0.4615	0.5385
	ffANN / FDSS	18	17	21	0	0.6250	0.4615	0.5385
	ffANN / FP	14	17	21	4	0.5536	0.4000	0.6000
ID	ffANN / FDSS	14	15	23	4	0.5179	0.3784	0.6216
	ffANN / RND	14	15	23	4	0.5179	0.3784	0.6216
	ffANN / ffANN	15	13	25	3	0.5000	0.3750	0.6250
	ffANN / FDSS	18	10	28	0	0.5000	0.3913	0.6087
	ffANN / FP	18	9	29	0	0.4821	0.3830	0.6170
	ffANN / ffANN	18	5	33	0	0.4107	0.3529	0.6471
	ffANN / RND	18	5	33	0	0.4107	0.3529	0.6471
	ffANN / FDSS	18	4	34	0	0.3929	0.3462	0.6538
TS	ffANN / RND	18	2	36	0	0.3571	0.3333	0.6667
15	ffANN / FP	18	0	38	0	0.3214	0.3214	0.6786
	ffANN / ffANN	18	0	38	0	0.3214	0.3214	0.6786
GPR	ffANN / FDSS	16	16	22	2	0.5714	0.4211	0.5789
	ffANN / ffANN / FDSS	3	19	19	5	0.5714	0.4063	0.5938
	ffANN / FP	13	8	30	5	0.3750	0.3023	0.6977
	ffANN / RND	18	3	35	0	0.3750	0.3396	0.6604

Table 3:	Complete	list o	of results	obtained	over	the	training	data	set,	in	terms	of	confusion	matrix
(TP,TN,F	P,FM), accu	racy (	ACC), roo	ot-mean so	quare	erro	r (RMSE)	) and a	area	und	er the I	ROC	C curve (Al	JC), for
each LDM	$I(\Omega)$ appro	ach w	hen comb	ined wtith	ı a giv	en N	NPDM (a	) met	hod.					

Sensor	CDM ( $\Omega$ ) / NPDM ( $\alpha$ )	TP	TN	FP	FN	ACC	RMSE	AUC
	ffANN / RND	0	38	0	18	0.6786	0.0000	0.0000
	ffANN / FP	0	38	0	18	0.6786	0.0000	0.0000
	avg / FDSS	18	<u> </u>	25	18 0	0.0786	0.0000	0.0000
	mdn / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	VP / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	ttANN / ttANN avg / ttANN	9 18	20 9	18	9	0.5179	0.3333	0.6667
	avg / FP	18	6	32	0	0.4286	0.3600	0.6400
	avg / RDN	18	6	32	0	0.4286	0.3600	0.6400
	mdn / FP VP / FP	18	6	32	0	0.4286	0.3600	0.6400
VS	avg / ffANN	18	5	33	0	0.4200	0.3529	0.6471
	VP / ffANN	18	5	33	0	0.4107	0.3529	0.6471
	FDSS / ffANN	18		38	0	0.3214	0.3214	0.6786
	FDSS / RDN	18	0	38	0	0.3214	0.3214	0.0786
	FDSS / FP	18	0	38	0	0.3214	0.3214	0.6786
	avg / RDN	18	0	38	0	0.3214	0.3214	0.6786
	max / FDSS	18	0	38	0	0.3214	0.3214	0.6786
	max / ffANN	18	0	38	0	0.3214	0.3214	0.6786
	max / RDN	18	0	38	0	0.3214	0.3214	0.6786
	avg / FDSS	18	13	25	0	0.5214	0.4186	0.5814
	avg / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	VP / FDSS	18	13	25	$\begin{array}{c} 0 \\ 2 \end{array}$	0.5536	0.4186	0.5814
	avg / ffANN	18	9 12	20	0	0.4821	0.3830	0.6170
	ffANN / FP	15	12	26	3	0.4821	0.3659	0.6341
	ffANN / ffANN	16	11	27	2	0.4821	0.3721	0.6279
	avg / FP	10	10 6	28 32	2 0	0.4043	0.3600	0.0304
	avg / RDN	18	6	32	0	0.4286	0.3600	0.6400
	avg / FP	18	6	32	0	0.4286	0.3600	0.6400
IR	VP/FP avg/ffANN	18	6 5	32	0	0.4286	0.3600	0.6400
	VP / ffANN	18	5	33	0	0.4107	0.3529	0.6471
	avg / RDN	18	1	37	0	0.3393	0.3273	0.6727
	VP / RDN FDSS / ffann	18	1	37	0	0.3393	0.3273	0.6727
	FDSS / FDSS	18	0	38	0	0.3214	0.3214	0.6786
	FDSS / RDN	18	0	38	0	0.3214	0.3214	0.6786
	FDSS / FP max / FP	18	0	38	0	0.3214	0.3214	0.6786
	max / FP max / FDSS	18	0	38	0	0.3214	0.3214	0.6786
	max / ffANN	18	0	38	0	0.3214	0.3214	0.6786
	max / RDN	18	0	38	0	0.3214	0.3214	0.6786
	avg / FDSS avg / FDSS	18 18	13	25 25	0	0.5536	0.4186	0.5814
	VP / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	avg / ffANN	18	9	29	0	0.4821	0.3830	0.6170
	avg / FP avg / RDN	18 18	6 6	<u> </u>	0	0.4286	0.3600	0.6400
	avg / FP	18	6	32	0	0.4286	0.3600	0.6400
	VP/FP	18	6	32	0	0.4286	0.3600	0.6400
	avg / ffANN VP / ffANN	18	5	33	0	0.4107	0.3529	0.6471
	ffANN / FP	18	2	36	0	0.3571	0.3333	0.6667
UV	avg / RDN	18	1	37	0	0.3393	0.3273	0.6727
	ITANN / FDSS VP / RDN	18	1	37	0	0.3393	0.3273	0.6727
	FDSS / ffANN	18	0	38	0	0.3214	0.3214	0.6786
	FDSS / FDSS	18	0	38	0	0.3214	0.3214	0.6786
	FDSS / RDN FDSS / FP	18	0	38	0	0.3214	0.3214	0.6786
	max / FP	18	0	38	0	0.3214	0.3214	0.6786
	max / FDSS	18	0	38	0	0.3214	0.3214	0.6786
	max / ffANN	18	0	38	0	0.3214	0.3214	0.6786
	ffANN / ffANN	18 18	0	38 38	0	0.3214	0.3214	0.0786
	ffANN / RDN	18	0	38	0	0.3214	0.3214	0.6786
	ffANN / FDSS	14	27	11	4	0.7321	0.5600	0.4400
	FDSS / IIANN FDSS / FDSS	0	38 38	0	18 18	0.6786	0.0000	0.0000
	FDSS / RDN	0	38	0	18	0.6786	0.0000	0.0000
	FDSS / FP	0	38	0	18	0.6786	0.0000	0.0000
	IIANN / KDN ffANN / ffANN	14	23 23	15 15	4	0.66429	0.4828	0.51/2
	avg / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	avg / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	ffANN / FP	18 8	20	23 18	10	0.5536	0.4186	0.5814
TS	avg / ffANN	18	9	29	0	0.4821	0.3830	0.6170
10	avg / FP	18	6	32	0	0.4286	0.3600	0.6400
	avg / KDN avg / FP	18	0 6	<u> </u>	0	0.4286	0.3600	0.6400
	VP / FP	18	6	32	0	0.4286	0.3600	0.6400
	mdn / ffANN	18	5	33	0	0.4107	0.3529	0.6471
	VP / ffANN mdn / RDN	18	5	33	0	0.4107	0.3529	0.6471
	VP / RDN	18	1	37	0	0.3393	0.3273	0.6727
	max / FP	18	0	38	0	0.3214	0.3214	0.6786
	max / FDSS max / ffann	18	0	38	0	0.3214	0.3214	0.6786
	max / RDN	18	0	38	0	0.3214	0.3214	0.6786
	ffANN / RDN	0	38	0	18	0.6786	0.0000	0.0000
	ffANN / FP		38		18	0.6786	0.0000	0.0000
GPR	ffANN / ffANN	0	38	0	10 18	0.0780	0.0000	0.0000
	FDSS / ffANN	0	38	0	18	0.6786	0.0000	0.0000
	FDSS / RDN	0	38	0	18	0.6786	0.0000	0.0000
	FDSS / FP FDSS / FDSS	0	38	0	18 18	0.6786	0.0000	0.0000
	avg / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	mdn / FDSS	18	13	25	0	0.5536	0.4186	0.5814
	VP/FDSS	18	13 0	25	0	0.5536	0.4186	0.5814
	avg / IPAININ avg / FP	10	9 6	32	0	0.4021	0.3600	0.6400
	mdn / FP	18	6	32	0	0.4286	0.3600	0.6400
	VP/FP	18	6	32	0	0.4286	0.3600	0.6400
	avg / KDN avg / ffANN	18 18	5 5	33	0	0.4107	0.3529	0.6471
	VP / ffANN	18	5	33	0	0.4107	0.3529	0.6471
	avg / RDN	18	0	38	0	0.3214	0.3214	0.6786
	max / FP max / FDSS	18	0	38	0	0.3214	0.3214	0.6786
	max / ffANN	18	0	38	0	0.3214	0.3214	0.6786
	max / RDN	18	0	38	0	0.3214	0.3214	0.6786
	VP / RDN	18	0	38	0	0.3214	0.3214	0.6786

Table 4: Complete list of results obtained over the training data set, in terms of confusion matrix (TP,TN,FP,FM), accuracy (ACC), root-mean square error (RMSE) and area under the ROC curve (AUC), for each CDM ( $\Omega$ ) approach when combined with a given NPDM ( $\alpha$ ) method.



Figure 1: Results of the VS agent over the training data set. In (a) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.



Figure 2: Results of the IR agent over the training data set. In (a) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.



Figure 3: Results of the UV agent over the training data set. In (*a*) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.



Figure 4: Results of the TS agent over the training data set. In (a) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.



Figure 5: Results of the GPR agent over the training data set. In (a) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.

# 3. Validation phase

Sensor	LDM ( $\beta$ ) / NPDM ( $\alpha$ )	TP	TN	FP	FN	ACC	RMSE	AUC
	ffANN / RDN	44	60	32	8	0.7222	0.5789	0.4211
VS	ffANN / ffANN	46	58	34	6	0.7222	0.5750	0.4250
v S	ffANN / FDSS	44	56	36	8	0.6944	0.5500	0.4500
	ffANN / FP	42	57	35	10	0.6875	0.5455	0.4545
	ffANN / FDSS	45	44	48	7	0.6181	0.4839	0.5161
ID	ffANN / ffANN	46	43	49	6	0.6181	0.4842	0.5158
	ffANN / RDN	44	41	51	8	0.5903	0.4632	0.5368
	ffANN / FP	44	39	53	8	0.5764	0.4536	0.5464
	ffANN / FP	51	39	53	1	0.6250	0.4904	0.5096
	ffANN / FDSS	51	35	57	1	0.5972	0.4722	0.5278
	ffANN / RDN	51	26	66	1	0.5347	0.4359	0.5641
	ffANN / ffANN	51	25	67	1	0.5278	0.4322	0.5678
	ffANN / ffANN	52	1	91	0	0.3681	0.3636	0.6364
тс	ffANN / FDSS	49	4	88	3	0.3681	0.3577	0.6423
15	ffANN / FP	52	0	92	0	0.3611	0.3611	0.6389
	ffANN / RDN	46	5	87	6	0.3542	0.3459	0.6541
GPR	ffANN / FDSS	40	20	72	12	0.4167	0.3571	0.6429
	ffANN / RDN	45	14	78	7	0.4097	0.3659	0.6341
	ffANN / FP	38	19	73	14	0.3958	0.3423	0.6577
	ffANN / ffANN	35	21	71	17	0.3889	0.3302	0.6698

Table 5: Complete list of results obtained over the validation data set, in terms of confusion matrix (TP,TN,FP,FM), accuracy (ACC), root-mean square error (RMSE) and area under the ROC curve (AUC), for each LDM ( $\Omega$ ) approach when combined with a given NPDM ( $\alpha$ ) method.

ff ANN / RPD         0         20         0         52         0.6389         0.0000         0.0000           mRNN / FDS         0         20         0         52         0.6389         0.0000         0.000           mR         PP         0         21         20         0.51         0.6389         0.0000         0.000           mR         PP         0         21         20         0.51         0.6389         0.0000         0.000           mR         PP         0         21         20         0.000         0.000         0.000           mR         PP         0         21         20         0.51         0.5381         0.5564         0.131         0.538           mR         PP         0         21         0.000         0.0311         0.5381         0.0321         0.557         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537         0.131         0.537 <th>Sensor</th> <th>CDM (<math>\omega</math>) / NPDM (<math>\alpha</math>)</th> <th>TP</th> <th>TN</th> <th>FP</th> <th>FN</th> <th>ACC</th> <th>RMSE</th> <th>AUC</th>	Sensor	CDM ( $\omega$ ) / NPDM ( $\alpha$ )	TP	TN	FP	FN	ACC	RMSE	AUC
IAAN / IP         0         0         2         0         15         0.0000         0.0000           arr         11         0         11         0         0.0000         0.0000           arr         0.0000         0.0000         0.0000         0.0000         0.0000         0.0000           arr         0.00000         0.000000		ffANN / RND	0	92	0	52	0.6389	0.0000	0.0000
mag / IP         Sign 34         <		ffANN / FP ffANN / FDSS	$\begin{array}{c c} 0 \\ 0 \end{array}$	92	0	52 52	0.6389	0.0000	0.0000
abs/ (FANN)         55         2         0         0.5764         0.5784 <th0.5784< th="">         0.5784         0.5784</th0.5784<>		avg / FP	50	38	54	2	0.630	0.0000	0.5192
acy (TANN)         51         32         60         1         0.557         0.458         0.544         0.458         0.558 </td <td></td> <td>avg / FDSS</td> <td>50</td> <td>37</td> <td>55</td> <td>2</td> <td>0.6042</td> <td>0.4762</td> <td>0.5238</td>		avg / FDSS	50	37	55	2	0.6042	0.4762	0.5238
Image (FRN)         Total         Total <thtotal< th="">         Total         Total</thtotal<>		avg / ffANN	51	32	60	1	0.5764	0.4595	0.5405
main / IPDS         50         27         65         2         0.5347         0.6438         0.5357           Mak / IP         50         24         68         2         0.5139         0.237         0.557           Mark / RANN         51         20         72         1         0.4931         0.4146         0.553           Mark / RANN         51         20         72         1         0.4931         0.4146         0.553           Mark / RANN         51         20         92         0         0.3611         0.5611         0.581           PDSS / FINS         52         0         92         0         0.3611         0.5611         0.588           mark / FINS         52         0         92         0         0.3611         0.5611         0.588           mark / FINS         52         0         92         0         0.3611         0.5611         0.568           mark / FINS         51         22         0.5614         0.5648         0.554         0.544           mark / FINS         51         22         0.5347         0.4348         0.554         0.544           mark / FINS         51         20         0.2		avg / RND	51	30	62	1	0.5625	0.4138	0.5487
VF / FPS8         50         72         65         2         6.54         6.64         2         6.513         0.4237         0.575           WF / IP         30         24         6.8         2         0.5139         0.4237         0.575           WF / IPN         30         27         1         0.4861         0.4131         0.388           WF / IPNS         15         19         7.3         1         0.4861         0.411         0.388           PISS / FINS         32         0         92         0         0.3611         0.511         0.5381         0.6381		mdn / FDSS	50	27	65	2	0.5347	0.4348	0.5652
W7 / P         N0         21         0.3         0.2         0.3         0.2         0.3         0.2         0.3 <th0.3< th=""> <th0.3< th=""></th0.3<></th0.3<>		VP / FDSS	50	27	65	2	0.5347	0.4348	0.5652
VS         mda / RNN         S1         20         72         1         0.0381         0.1416         0.0385           mda / RANN         S1         19         73         1         0.0381         0.0111         0.0381           PDSS / LIANN         S1         19         73         1         0.4861         0.0111         0.538           PDSS / FDNS         S2         0         92         0         0.3611         0.3511         0.3511           PDSS / FDNS         S2         0         92         0         0.3611         0.3511         0.558           max / FDS         S2         0         92         0         0.3611         0.3581         0.6680         0.559           max / FDNS         S3         S4         22         0.6111         0.6860         0.559           max / FDNS         S3         S4         22         0.6111         0.6360         0.559           max / FDNS         S3         S4         22         0.6111         0.6360         0.559           max / FDNS         S3         S4         S2         0.621         0.5561         0.6660         0.557           max / FDNN         S1         210		VP / FP	50	24	68 68	$\frac{2}{2}$	0.5139	0.4237	0.5763
W/ RND         51         20         72         1         0.4961         0.4146         0.583           VP / RANN         51         19         73         1         0.4861         0.4111         0.588           PDSS / FDSS         22         0         22         0         20         0.3611         0.3611         0.581           PDSS / FDSS         22         0         20         0.3611         0.581         0.581         0.5811	VS	mdn / RND	51	20	72	1	0.4931	0.4146	0.5854
Image         Image <th< td=""><td></td><td>VP/RND</td><td>51</td><td>20</td><td>72</td><td>1</td><td>0.4931</td><td>0.4146</td><td>0.5854</td></th<>		VP/RND	51	20	72	1	0.4931	0.4146	0.5854
FPSS / HANN         52         0         92         0         0.3011		mdn / ffANN VP / ffANN	51	19	73	1	0.4861	0.4113	0.5887
IPDSS / FDS         52         0         92         0         0         0.3611         0.3612         0.3611         0		FDSS / ffANN	52	0	92	0	0.3611	0.3611	0.6389
FINS / RND         32         0         92         0         0.6401         0.6401         0.6301         0.6381           max / PDS         32         0         92         0         0.3611         0.6381         0.6381           max / PDS         52         0         92         0         0.3611         0.6381           max / RXD         52         0         92         0         0.3611         0.6381           max / RXD         52         0         0.3611         0.6383         0.6361         0.6383           max / RXD         52         0         0.571         0.57         0.572         0.6411         0.4564         0.539           max / RXD         51         21         0.6411         0.4564         0.4595         0.534           max / RXD         51         22         0.5347         0.4348         0.555           max / RXD         51         20         27         0.4341         0.458           max / RXD         51         20         21         0.4361         0.4361         0.538           max / RXD         52         0         0.511         0.321         0.4361         0.538           max / RXD </td <td></td> <td>FDSS / FDSS</td> <td>52</td> <td>0</td> <td>92</td> <td>0</td> <td>0.3611</td> <td>0.3611</td> <td>0.6389</td>		FDSS / FDSS	52	0	92	0	0.3611	0.3611	0.6389
max / FP         S2         0         93         0         033(11         036(11 <th< td=""><td></td><td>FDSS / RND FDSS / FP</td><td>52</td><td>0</td><td>92</td><td>0</td><td>0.3611</td><td>0.3611</td><td>0.6389</td></th<>		FDSS / RND FDSS / FP	52	0	92	0	0.3611	0.3611	0.6389
max / TDSS         52         0         92         0         0.3611         0.6383           max / RND         52         0         92         0         0.3611         0.6383           max / RND         52         0         92         0         0.3611         0.6384           max / FDSS         50         37         55         2         0.6042         0.4480         0.513           max / FDSS         50         37         55         5         0.6383         0.4060         0.529           max / FDSS         50         27         55         5         0.6383         0.4080         0.539           max / FDSS         50         27         55         2         0.5347         0.4480         0.557           max / FDSS         50         27         55         2         0.5347         0.4480         0.557           max / FDSS         52         0         27         1         0.4981         0.4348         0.558           max / FDNS         52         0         20         0.3611         0.588         0.4113         0.588           max / FDNS         52         0         20         0.3611         0.583		max / FP	52	0	92	0	0.3611	0.3611	0.6389
Imax / IANN         22         0         92         0         0.3611         0.0361		max / FDSS	52	0	92	0	0.3611	0.3611	0.6389
#FANK /# SANN         48         41         51         42         0.6111         0.4805         0.513           #GANN / FDSS         48         60         52         4         0.6111         0.4805         0.523           #GANN / FDN         48         38         54         4         0.5972         0.4760         0.533           #GANN / FDN         48         38         54         4         0.5972         0.4760         0.533           #GANN / FDN         51         31         61         1         0.5674         0.4468         0.553           #JNN / FD         50         27         65         2         0.5347         0.4348         0.555           mah / FDP         50         23         69         2         0.5569         0.526         0.557           mah / FDN         51         20         72         1         0.4910         0.538         0.4140         0.538           FDSS / FDSS         52         0         92         0         0.3611         0.538         0.4113         0.538           FDSS / FDS         52         0         92         0         0.3611         0.538         0.4113         0.538 <td< td=""><td></td><td>max / ffANN max / RND</td><td>52</td><td>0</td><td>92</td><td>0</td><td>0.3611</td><td>0.3611</td><td>0.6389</td></td<>		max / ffANN max / RND	52	0	92	0	0.3611	0.3611	0.6389
arg / FP         50         38         54         2         0.6111         0.4800         5.230           urg / TDSS         50         37         55         2         0.6042         0.4760         5.333           TRANN / RPD         48         38         34         44         0.5972         0.4760         6.3393           urg / RNN         51         21         0.61         1         0.5564         0.4395         0.5444           urg / RNN         51         21         0.1         0.5764         0.4385         0.544           urg / RNN         51         21         21         0.4314         0.4355         0.4444           urg / RNN         51         21         21         1         0.4361         0.4320         0.575           VP / FRNN         51         21         21         1         0.4461         0.535           VP / FRNN         51         10         73         1         0.4861         0.4113         0.538           VP / FRNN         51         21         0         0.3611         0.5161         0.516         0.516         0.537           PDSS / FDSS         20         20         0.3611         <		ffANN / ffANN	48	41	51	4	0.6181	0.3011	0.5152
LUANY / DOSS         48         40         52         4         0.6111         0.4800         0.230           #TANY / RND         48         38         54         4         0.5972         0.4762         0.523           #ANN / PA         71         57         55         0.8330         0.4080         0.539           arg / RANN         51         31         61         1         0.6640         0.4554         0.544           mda / FDSS         50         27         65         2         0.5347         0.4348         0.555           mda / RDDS         50         27         1         0.4391         0.4440         0.535           mda / RND         51         20         2         0.5600         0.4202         0.579           mda / RND         51         20         2         0         0.561         0.538           PDSS / IDNS         52         0         2         0         0.561         0.538         0.561         0.538           PDSS / IDNS         52         0         2         0         0.561         0.538         0.561         0.561         0.538         0.561         0.5444         0.561         0.5444		avg / FP	50	38	54	2	0.6111	0.4808	0.5192
Image: def constraints         Image: def constraints <thimage: constraints<="" def="" th="">         Image: def constraints<!--</td--><td></td><td>ffANN / FDSS</td><td>48</td><td>40</td><td>52</td><td>4</td><td>0.6111</td><td>0.4800</td><td>0.5200</td></thimage:>		ffANN / FDSS	48	40	52	4	0.6111	0.4800	0.5200
IBANN / IP         47         37         55         5         0.5833         0.4668         0.539           wg/ RND         51         32         66         1         0.5564         0.4595         0.5448           wg/ RND         50         27         65         2         0.5347         0.4448         0.556           VP / IDSS         50         27         65         2         0.5347         0.4448         0.557           WP / IDSS         50         27         1         0.4951         0.4416         0.558           WP / IDSN         51         20         72         1         0.4951         0.4146         0.558           WP / IDSN         51         19         73         1         0.4861         0.4115         0.588           PDSS / IDSN         52         0         92         0         0.5611         0.511         0.638           PDSS / IPS         52         0         92         0         0.5611         0.638           PDSS / IPS         52         0         92         0         0.5611         0.561         0.575           Max / HAN         52         0         92         0         0.561		ffANN / RND	48	38	54	4	0.0042	0.4702	0.5294
avg /f RNN         51         32         60         1         0.5764         0.4554         0.544           mda / FDSS         50         27         65         2         0.5347         0.4348         0.565           mda / FDSS         50         27         65         2         0.5347         0.4348         0.565           mda / RND         51         20         72         1         0.4931         0.4146         0.535           mda / RND         51         20         72         1         0.4931         0.4146         0.535           mda / RNN         51         19         73         1         0.4861         0.4113         0.5388           PDSS / RND         52         0         92         0         0.511         0.531         0.531         0.531         0.531         0.531         0.531         0.538           PDSS / RND         52         0         92         0         0.511         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531         0.531		ffANN / FP	47	37	55	5	0.5833	0.4608	0.5392
arg / FN bs         for         arg / FP         arg / FP         arg / FP           IR         Mah / PP         S0         23         69         2         0.564         0.4348         0.555           VP / PP         S0         23         69         2         0.566         0.4202         0.579           WP / FP         S0         23         69         2         0.566         0.4202         0.579           MA / RND         S1         20         72         1         0.4941         0.4146         0.385           VP / FANN         S1         19         73         1         0.4861         0.4113         0.588           FDSS / FDS         S2         0         92         0         0.3611         0.3611         0.5611           PDSS / FDS         S2         0         92         0         0.3611         0.3611         0.5611           max / FDS         S2         0         S2         0         0.564         0.4555         0.544           max / FDS         S0         37         55         2         0.662         0.4555         0.544           max / FDS         S0         75         2         0.666		avg / ffANN	51	32	60	1	0.5764	0.4595	0.5405
VP / FDSS         90         27         65         2         0.5060         0.4320         0.579           WP / FP         50         23         69         2         0.5060         0.4320         0.579           Mari / RND         51         20         72         1         0.4931         0.4166         0.585           Mari / RAN         51         19         73         1         0.4661         0.4113         0.588           PDSS / IPDS         20         0         20         0         0.3611         0.3611         0.5611         0.6581           PDSS / IPDS         20         0         20         0         0.3611         0.3611         0.6361         0.6581         0.63611         0.63611         0.63611         0.6361         0.6361         0.63611         0.6361         0.63611         0.63611         0.63611         0.63611         0.63611         0.6361         0.63611		mdn / FDSS	50	27	65	2	0.5347	0.4334	0.5440
muth / PP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / RNN         51         20         72         1         0.4361         0.4113         0.588           PDSS / PDSS         20         0         20         0         0.3611         0.3611         0.581           PDSS / PDSS         20         0         20         0         0.3611         0.3611         0.581           PDSS / PDSS         20         0         20         0         0.3611         0.3611         0.5831           max / PDS         52         0         92         0         0.3611         0.3611         0.5831           max / PDS         52         0         92         0         0.3611         0.3611         0.583           max / PDS         75         20         92         0         0.3611         0.3611         0.583           max / PDS         20         0         3.61         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611 <td< td=""><td></td><td>VP / FDSS</td><td>50</td><td>27</td><td>65</td><td>2</td><td>0.5347</td><td>0.4348</td><td>0.5652</td></td<>		VP / FDSS	50	27	65	2	0.5347	0.4348	0.5652
IR         Mar / RND         51         20         72         1         0.4931         0.4146         0.585           WP / RND         51         20         72         1         0.4931         0.4146         0.585           WP / RND         51         19         73         1         0.4861         0.4113         0.588           FDSS / FDSS         52         0         92         0         0.3611         0.3611         0.5631           FDSS / FDSS         52         0         92         0         0.3611         0.5631         0.5631           FDSS / FDS         52         0         92         0         0.3611         0.5631         0.5631           max / FDS         52         0         92         0         0.3611         0.5631         0.5631           max / FDSS         50         7         55         2         0.6421         0.4762         0.523           max / FDSS         50         7         55         2         0.5441         0.4350         0.5436           max / FDS         50         27         65         2         0.5461         0.4348         0.556           max / RNN / RAD         52 <td></td> <td>mdn / FP</td> <td>50</td> <td>23</td> <td>69</td> <td>2</td> <td>0.5069</td> <td>0.4202</td> <td>0.5798</td>		mdn / FP	50	23	69	2	0.5069	0.4202	0.5798
VP / RND         1         2         2         1         0.4331         0.4140         0.538 0.4113         0.53811         0.5311         0.6331         0.648         0.512         0.72         0.6311         0.6311         0.6331         0.648         0.512         0.7564         0.4483         0.556         0.4483         0.556         0.4483         0.556         0.4483         0.556         0.4483         0.556         0.4483         0.556         0.4483         0.556         0.4483         0.556         0.4483         0.556         0.4443         0.556         0.4443         0.556         0.4443	IR	vr/Fr mdn/RND	50	23	09 72		0.3069	0.4202	0.5798
Image: https://dxin.visit.proj.         10//dxin.visit.proj.         10//dxin.visit.proj.         10//dxin.visit.proj.           PDSS / fDSS / fANN         52         0         92         0         0.3611         0.3611         0.568           PDSS / fDSS / fNND         52         0         92         0         0.3611         0.3611         0.568           max / FDS         52         0         92         0         0.3611         0.3611         0.568           max / FDS         52         0         92         0         0.3611         0.3611         0.568           max / RND         52         0         92         0         0.3611         0.		VP / RND	51	20	72	1	0.4931	0.4146	0.5854
vf / I ANN         51         19         7.8         1         0.4361         0.6111         0.6538           FDSS / IFDNS         52         0         92         0         0.3611         0.3611         0.5631           FDSS / FPD         52         0         92         0         0.3611         0.3611         0.5631           max / FDS         52         0         92         0         0.3611         0.3611         0.5631           max / FDNS         52         0         92         0         0.3611         0.3611         0.568           max / FDNS         50         0.7         55         2         0.6042         0.4762         0.523           awg / FDNS         50         0.7         55         2         0.6042         0.4576         0.4537           max / FDNS         52         0         2         0.5374         0.4333         0.556           mdn / FDNS         50         27         65         2         0.5669         0.4202         0.579           mdn / FDNS         50         27         55         2         0.4431         0.458           ffANN / RND         52         0         2         0.5377		mdn / ffANN	51	19	73	1	0.4861	0.4113	0.5887
Image: Instantion         Image: Instantion         Image: Instantion         Image: Instantion           PDSS / FDSS         S2         0         2         0         0.3611         0.3611         0.6381           PDSS / FDSS         S2         0         S2         0         0.3611         0.3611         0.6381           max / FDSS         S2         0         S2         0         0.3611         0.3611         0.3611           max / FDS         S2         0         S2         0         0.3611         0.3611         0.3611           max / FDS         S2         0         S2         0         0.3611         0.3611         0.3611           max / FDS         S2         0         S2         0         0.3611         0.3611         0.3611           max / FDS         S2         0         S2         0.3611         0.3611         0.3611         0.3611           max / FDS         S2         0         S2         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611		VP / ITANN FDSS / IFANN	51	19 0	92		0.4861	0.4113	0.5887
FDSS / PN         52         0         92         0         0.3611         0.5611         6.688           max / IPDS         52         0         92         0         0.3611         0.5611         0.638           max / IRAN         52         0         92         0         0.3611         0.3611         0.638           max / RND         52         0         92         0         0.3611         0.3680         0.519           awg / FDSS         50         37         55         2         0.6041         0.3680         0.519           awg / FDSS         50         37         55         2         0.6041         0.3561         0.3431         0.555           awg / FANN         51         22         667         0         0.5556         0.4438         0.555           ffANN / FANN         52         25         67         0         0.5347         0.4348         0.555           ffANN / FANN         52         26         2         0.5669         0.4202         0.579           mdn / FDSS         52         0         22         0.0569         0.4202         0.579           mdn / FDNS         52         0         92<		FDSS / FDSS	52	0	92	0	0.3611	0.3611	0.6389
FLDS / FP         52         0         92         0         0.3611         0.3611         0.638           max / FRN         52         0         92         0         0.3611         0.3611         0.638           max / FRND         52         0         92         0         0.3611         0.3614         0.3615         0.372         0.372         0.372         0.372         0.3724         0.3331         0.565         0.3747         0.3331         0.565         0.3747         0.3331         0.565         0.377         0.3728         0.3331         0.565         0.377         0.3421         0.3797         0.3331         0.565         0.377         0.347         0.3331         0.565         0.377         0.3331         0.565         0.377         0.3331         0.565         0.377         0.3611         0.535         0.377         0.3611         0.3611         0.3611         0.3611         0.3611         0.3611		FDSS / RND	52	0	92	0	0.3611	0.3611	0.6389
Imax / FP         52         0         22         0         0.3611         0.361         0.361           max / RND         52         0         92         0         0.3611         0.361         0.361           max / RND         52         0         92         0         0.3611         0.361         0.361           avg / FDS         50         37         55         2         0.002         0.472         0.523           avg / RND         51         28         64         0         0.556         0.443         0.555           mdn / FDSS         50         27         65         2         0.347         0.4448         0.555           ffANN / RND         52         23         64         0         0.5278         0.4448         0.555           ffANN / RND         52         27         65         2         0.5069         0.4202         0.579           UV         FP         50         27         66         2         0.5069         0.4202         0.579           Ma/ FRN         51         20         72         1         0.4361         0.431         588           MD / FRNN         51         20		FDSS / FP	52	0	92	0	0.3611	0.3611	0.6389
max / RND         52         0         92         0         0.3611         0.5618           max / RND         52         0         92         0         0.3611         0.5638           avg / FDSS         50         37         55         2         0.6042         0.4762         0.534           avg / FANN         51         32         60         1         0.5764         0.4359         0.534           ffANN / FDSS         52         30         62         0         0.556         0.433         0.555           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.555           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.555           mdn / FDS         50         27         64         0         0.556         0.4432         0.556           mdn / FDS         50         27         65         2         0.5347         0.4348         0.555           mdn / FDS         50         27         1         0.4946         0.557         md44         0.557           mdn / FDS         50         27         1         0.4461		max / FP	52	0	92	0	0.3611	0.3611	0.6389
max / RND         52         0         9.2         0         0.3611         0.4680         0.519           avg / FDNS         50         37         55         2         0.6042         0.4762         0.523           avg / FANN         51         32         60         1         0.5694         0.4561         0.5434           avg / RND         51         28         64         0         0.5564         0.4483         0.555           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.555           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.555           mdn / FD         50         23         69         2         0.5069         0.4202         0.579           VP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RNN         51         20         72         1         0.4931         0.4146         0.585           VP / FND         51         20         72         1         0.4931         0.4146         0.585           VP / FND         52         0         <		max / ffANN	52	0	92	0	0.3611	0.3611	0.6389
avg / FPS         50         35         2         0.0012         0.4780         0.539           avg / IANN         51         32         60         1         0.5764         0.4395         0.533           avg / RNN         51         32         60         1         0.5644         0.433         0.551           gw / RND         51         28         64         0         0.556         0.4433         0.555           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           fANN / fRANN         52         23         66         2         0.5069         0.4220         0.579           WP / FDS         50         27         66         2         0.5069         0.4220         0.579           WP / FDS         51         20         72         1         0.4931         0.4146         0.585           mdn / FNN         51         20         72         1         0.4931         0.4146         0.585           mdn / FNN         51         20         72         1         0.4931         0.4146         0.585           mdn / FNN         51         20         72		max / RND	52	0	92	0	0.3611	0.3611	0.6389
evg (fANN         51         32         60         1         0.5764         0.4430         0.543           ffANN / FDSS         52         30         62         0         0.5564         0.4433         0.551           arg (RND         51         28         64         1         0.5484         0.555           md / FDSS         50         27         65         2         0.5347         0.4348         0.555           ffANN / RNN         52         23         66         2         0.5069         0.4202         0.579           mdn / FDSS         50         27         1         0.4931         0.4146         0.585           mdn / FDS         51         20         72         1         0.4931         0.4146         0.585           mdn / FDS         52         0         92         0         0.3611         0.613         0.583           P/ P / RND         51         20         72         1         0.4861         0.4113         0.588           PDSS / FDS         20         92         0         0.3611         0.638         0.0000         0.000         0.000         0.000         0.000         0.000         0.000         0.0		avg / FP	50	38	54	$\frac{2}{2}$	0.6111	0.4808	0.5192
ffANN / FDSS         52         30         62         0         0.556         0.4483         0.554           wg (RND         51         28         64         0         0.555         0.4483         0.555           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           ffANN / fANN         50         27         65         2         0.5347         0.4348         0.565           ffANN / fANN         50         23         69         2         0.5069         0.4202         0.579           WP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / ffANN         51         10         72         1         0.4931         0.4146         0.585           WP / IRNN         51         10         73         1         0.4861         0.4113         0.588           FDSS / IFANN         52         0         92         0         0.3611         0.3611         0.538           FDSS / IFANN         52         0         92         0         0.3611         0.3611         0.538           FDSS / IFANN         52         0.6		avg / ffANN	51	32	60	1	0.5764	0.4595	0.5405
ITALNY /P         32         28         64         1         0.5386         0.4435         0.555           mdn /PDSS         50         27         65         2         0.5347         0.4348         0.555           mdn /PDSS         50         27         65         2         0.5347         0.4348         0.555           W/ FDSS         50         27         65         2         0.5347         0.4338         0.566           mdn /FDNS         50         27         65         2         0.5069         0.4202         0.579           mdn /FANN         51         20         72         1         0.4931         0.4146         0.585           WP /FRND         51         20         72         1         0.4931         0.4146         0.585           mdn /fANN         51         19         73         1         0.4861         0.4113         0.588           FDSS /FND         52         0         92         0         0.3611         0.3611         0.6388           max /fFN         52         0         92         0         0.3611         0.3611         0.6388           max /FDS         52         0         92		ffANN / FDSS	52	30	62	0	0.5694	0.4561	0.5439
mdn / FDSS         50         27         65         2         0.5347         0.4348         0.563           II/ANN / II/ANN         52         25         67         0         0.5347         0.4348         0.563           II/ANN / RND         52         24         68         0         0.5278         0.4338         0.565           II/ANN / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / FP         50         23         69         2         0.5069         0.4202         0.579           VP / FND         51         20         72         1         0.4931         0.4146         0.585           mdn / FANN         51         19         73         1         0.4861         0.4113         0.588           FDSS / FDNS         52         0         92         0         0.3611         0.3611         0.638           FDSS / FDNS         52         0         92         0         0.3611         0.3611         0.638           max / FDNS         52         0         92         0         0.3611         0.3611         0.638           max / FDN         52         0.		ffANN / FP avg / RND	52	28 28	64 64	0	0.5556	0.4483	0.5517
ffANN / ffANN         52         25         67         0         0.5347         0.4370         0.563           VP / FDS         50         2         0.5347         0.4348         0.556           ffANN / RND         52         24         68         0         0.5278         0.4333         0.566           mdn / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           WP / ffANN         51         19         73         1         0.4861         0.4113         0.588           FDSS / ffANN         52         0         92         0         0.3611         0.3611         0.538           FDSS / ffANN         52         0         92         0         0.3611         0.3611         0.638           max / FDS         52         0         92         0         0.3611         0.3611         0.381           max / FDS         52         0         92         0         0.3611         0.3611         0.361           max / FDS         51         0         02         0		mdn / FDSS	50	27	65	2	0.5347	0.4348	0.5652
UV         IV/ FDSS         50         2/         65         2         0.534/         0.4348         0.5057           IVN / RND         50         23         69         2         0.5069         0.4202         0.579           VP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / fRND         51         20         72         1         0.4931         0.4146         0.585           VP / FNND         51         20         72         1         0.4931         0.4146         0.585           Mn/ fRNN         51         19         73         1         0.4861         0.4113         0.588           FDSS / FDNS         52         0         92         0         0.3611         0.3611         0.638           FDSS / FDNS         52         0         92         0         0.3611         0.3611         0.638           max / FDS         52         0         92         0         0.3611         0.3611         0.638           max / FDNS         52         0         92         0         0.3611         0.3611         0.638           max / FDNS         50		ffANN / ffANN	52	25	67	0	0.5347	0.4370	0.5630
Image of the second s		VP / FDSS #fann / RND	50	27	65 68	$\frac{2}{0}$	0.5347	0.4348	0.5652
UV         VP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RANN         51         20         72         1         0.4931         0.4146         0.585           mdn / IfANN         51         19         73         1         0.4861         0.4113         0.588           PDSS / RNN         52         0         92         0         0.3611         0.3611         0.6388           FDSS / FDS         52         0         92         0         0.3611         0.3611         0.6388           max / FDSS         52         0         92         0         0.3611         0.3611         0.6388           max / FDSS         52         0         92         0         0.3611         0.3611         0.6388           max / RDS         52         0         92         0         0.3611         0.3611         0.6388           max / RDS         52         0         92         0         0.3611         0.3611         0.6388           max / RDS         52         0         0.3811         0.3631         0.668         0.0000         0.000         0.0000         0.0000         0.		mdn / FP	50	23	69	2	0.5276	0.4303	0.5798
mdn / RND         51         20         7/2         1         0.4931         0.4146         0.585           mdn / fANN         51         19         73         1         0.4861         0.4113         0.588           VP / ffANN         51         19         73         1         0.4861         0.4113         0.588           FDSS / fDSS         52         0         92         0         0.3611         0.3611         0.668           FDSS / FDS         52         0         92         0         0.3611         0.3611         0.668           max / FDS         52         0         92         0         0.3611         0.3611         0.638           max / FDS         52         0         92         0         0.3611         0.3611         0.638           max / FDS         52         0         92         0         52         0.6389         0.0000         0.000           FDSS / fANN         0         92         0         52         0.6389         0.0000         0.000           FDSS / fDND         0         22         0         52         0.6389         0.0000         0.000           FDSS / fDND         0	UV	VP/FP	50	23	69	2	0.5069	0.4202	0.5798
The Area         51         20         12         1         0.4861         0.4113         0.588           VP (FfANN         51         19         73         1         0.4861         0.4113         0.588           FDSS (FINN         52         0         92         0         0.3611         0.3611         0.6388           FDSS (FND         52         0         92         0         0.3611         0.3611         0.6388           FDSS (FND         52         0         92         0         0.3611         0.3611         0.6388           max /FDS         52         0         92         0         0.3611         0.3611         0.6388           max /FDS         52         0         92         0         0.3611         0.3611         0.6389           max /FRND         52         0         92         0         52         0.6389         0.0000         0.000           FDSS /FNS         0         92         0         52         0.6389         0.0000         0.000           FDSS /FNS         0         92         0         52         0.6389         0.0000         0.000           FDSS /FND         0         92		mdn / RND	51	$\frac{20}{20}$	72	1	0.4931	0.4146	0.5854
VP /fANN         51         19         73         1         0.4861         0.4113         0.588           FDSS / fIANN         52         0         92         0         0.3611         0.3611         0.638           FDSS / FND         52         0         92         0         0.3611         0.3611         0.638           FDSS / FP         52         0         92         0         0.3611         0.3611         0.638           max / FDNS         52         0         92         0         0.3611         0.3611         0.638           max / fRNN         52         0         92         0         0.3611         0.3611         0.638           max /fRANN         52         0         92         0         0.3611         0.3611         0.638           max /fRANN         92         0         52         0.6389         0.0000         0.000           FDSS / FN         0         92         0         52         0.6389         0.0000         0.000           FDSS / FN         0         92         0         53         39         13         0.6389         0.500         3.042           ffANN / fNA         38		mdn / ffANN	51	19	73	1	0.4951	0.4113	0.5854
FDSS / IANN         52         0         92         0         0.3611         0.5611         0.6381           FDSS / RND         52         0         92         0         0.3611         0.3611         0.638           FDSS / FP         52         0         92         0         0.3611         0.3611         0.638           max / FP         52         0         92         0         0.3611         0.3611         0.638           max / FDSS         52         0         92         0         0.3611         0.3611         0.638           max / FDSS         52         0         92         0         0.3611         0.3611         0.638           max / FDSS         52         0.52         0.6389         0.0000         0.000           FDSS / FND         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDS         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDS         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDS         0         92         0         52		VP / ffANN	51	19	73	1	0.4861	0.4113	0.5887
IDSS / RND         52         0         92         0         0.3011         0.3011         0.3011         0.3011         0.3011         0.3611         <		FDSS / ffANN	52	0	92	0	0.3611	0.3611	0.6389
FDSS / FP         52         0         92         0         0.3611         0.3611         0.6381           max / FDSS         52         0         92         0         0.3611         0.3611         0.638           max / fLANN         52         0         92         0         0.3611         0.3611         0.638           max / RND         52         0         92         0         0.3611         0.3611         0.638           max / RND         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FND         0         92         0         52         0.6389         0.0000         0.0000           arg / FP         0         92         0         52         0.6389         0.0000         0.000           arg / FP         0         92         0         52         0.6389         0.0000         0.000           arg / FDSN         70         38         54         2         0.6111         0.4480         0.515           arg / FDSN         50         37         55         2         0.5347         0.348         0.554           max / FDSS         50         27         <		FDSS / RND	52	0	92	0	0.3611	0.3611	0.6389
max / FP         52         0         92         0         0.3611         0.3611         0.3611         0.3611           max / ffANN         52         0         92         0         0.3611         0.3611         0.3613           max / RND         52         0         92         0         0.3611         0.3611         0.3613           ffANN / RND         40         57         35         12         0.6736         0.5333         0.466           FDSS / fRND         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FP         0         92         0         52         0.6389         0.0000         0.000           avg / FP         50         38         54         2         0.6111         0.4808         0.519           ffANN / ffANN         38         50         42         14         0.6111         0.4808         0.555           avg / ffANN         51         32         60         1         0.5764         0.4595         0.540           avg / fFANN         51         32         60         1         0.5764         0.4595         0.540           mdn / FDSS <t< td=""><td></td><td>FDSS / FP</td><td>52</td><td>0</td><td>92</td><td>0</td><td>0.3611</td><td>0.3611</td><td>0.6389</td></t<>		FDSS / FP	52	0	92	0	0.3611	0.3611	0.6389
Imax / fFANN         52         0         92         0         0.3011         0.3333         0.466           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.000           FDSS / FD         0         92         0         52         0.6389         0.0000         0.000           avg / FDS         50         37         55         2         0.6011         0.4750         0.525           avg / FDSS         50         37         55         2         0.6042         0.4762         0.525           avg / FDSS         50         27         65         2         0.5347         0.4348         0.565		max / FP	52	0	92	0	0.3611	0.3611	0.6389
max / RND         52         0         92         0         0.3611         0.3611         0.6381           iffANN / RND         40         57         35         12         0.6736         0.5333         0.466           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FP         0         92         0         52         0.6389         0.0000         0.0000           may / FP         50         38         54         2         0.6111         0.4808         0.519           ifANN / fBAN         38         50         42         14         0.6111         0.4762         0.523           avg / fBAN         51         32         60         1         0.5764         0.4595         0.540           avg / RND         51         32         60         1         0.5764         0.4348         0.565           mdn / FDS         50         27         65         2         0.5347         0.4348         0.565           mdn / FND         51         20 </td <td></td> <td>max / ffANN</td> <td>52</td> <td>0</td> <td>92</td> <td>0</td> <td>0.3611</td> <td>0.3611</td> <td>0.6389</td>		max / ffANN	52	0	92	0	0.3611	0.3611	0.6389
ffANN / RND         40         57         35         12         0.6736         0.5333         0.466           FDSS / ffANN         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FP         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FDSS         39         33         0.6389         0.0000         0.000           avg / FP         50         38         54         2         0.6111         0.4808         0.519           ffANN / FANN         51         32         60         1         0.5764         0.4595         0.540           avg / fANN         51         32         60         1         0.5764         0.4438         0.565           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           WP / FDS         50         27         65         2         0.5347         0.4348         0.565           WP / FND         51         20         72         1 </td <td></td> <td>max / RND</td> <td>52</td> <td>0</td> <td>92</td> <td>0</td> <td>0.3611</td> <td>0.3611</td> <td>0.6389</td>		max / RND	52	0	92	0	0.3611	0.3611	0.6389
FDSS / ITANN         0         92         0         52         0.6389         0.0000         0.0000           FDSS / RND         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FP         0         92         0         52         0.6389         0.0000         0.0000           ifANN / FDSS         39         53         39         13         0.6389         0.5000         0.500           avg / FP         50         38         54         2         0.60111         0.4808         0.519           avg / FDSS         50         37         55         2         0.6042         0.4762         0.525           avg / RND         51         32         60         1         0.5764         0.4595         0.540           avg / RND         51         32         60         1         0.5764         0.4585         0.540           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           VP / FDS         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         10		ffANN / RND	40	57	35	12	0.6736	0.5333	0.4667
FDSS / RND         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FDSS         39         53         39         13         0.6389         0.5000         0.5000           avg / FP         50         38         54         2         0.6111         0.4808         0.5100           avg / ffANN         51         32         60         1         0.5764         0.4595         0.530           avg / ffANN         51         32         60         1         0.5764         0.4595         0.540           avg / fRAN         51         32         60         1         0.5764         0.4595         0.540           avg / fRND         51         32         60         1         0.5764         0.4395         0.540           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           VP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           VP / fRANN         51         19 </td <td></td> <td>FDSS / FDSS</td> <td>0</td> <td>92</td> <td>0</td> <td>52 52</td> <td>0.6389</td> <td>0.0000</td> <td>0.0000</td>		FDSS / FDSS	0	92	0	52 52	0.6389	0.0000	0.0000
FDSS / FP         0         92         0         52         0.6389         0.0000         0.0000           may / FP         50         38         54         2         0.6111         0.4808         0.519           may / FDSS         50         37         55         2         0.6042         0.4762         0.525           avg / FDSS         50         37         55         2         0.6042         0.4762         0.525           avg / RND         51         32         60         1         0.5764         0.4595         0.540           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           VP / FDSS         50         27         65         2         0.5347         0.4348         0.565           mdn / FP         50         23         69         2         0.5069         0.4202         0.579           VP / FND         51         20         72         1         0.4931         0.4146         0.585           mdn / RND         51         19         73         1         0.4861         0.4113         0.588           max / FD         52         0 <t< td=""><td></td><td>FDSS / RND</td><td>0</td><td>92</td><td>0</td><td>52</td><td>0.6389</td><td>0.0000</td><td>0.0000</td></t<>		FDSS / RND	0	92	0	52	0.6389	0.0000	0.0000
Instruct (FDS)         57         53         54         15         0.0589         0.5000           avg / FP         50         38         54         2         0.6111         0.4808         0.519           ffANN / ffANN         38         50         42         14         0.6111         0.4750         0.523           avg / FDSS         50         37         55         2         0.6042         0.4762         0.523           avg / RND         51         32         60         1         0.5764         0.4595         0.540           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           VP / FDSS         50         27         65         2         0.5069         0.4202         0.579           VP / FDSS         50         27         1         0.4931         0.4146         0.585           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           max / FD         52         0         92         0		FDSS / FP	$\begin{vmatrix} 0 \\ 20 \end{vmatrix}$	92	$\overline{0}$	52	0.6389	0.0000	0.0000
ffANN/ffANN         38         50         42         14         0.6111         0.4750         0.525           avg / FDSS         50         37         55         2         0.6042         0.4762         0.523           avg / RND         51         32         60         1         0.5764         0.4595         0.540           avg / RND         51         32         60         1         0.5764         0.4595         0.540           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           VP / FDSS         50         27         65         2         0.5069         0.4202         0.579           VP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           VP / RND         51         20         92         0         0.3611         0.3611         0.638           max / FDS         52         0		avg / FP	59 50	38	59 54	13	0.6389	0.3000	0.5000
avg / FDSS         50         37         55         2         0.6042         0.4762         0.5233           avg / RND         51         32         60         1         0.5764         0.4595         0.540           avg / RND         51         32         60         1         0.5764         0.4595         0.540           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           WP / FDSS         50         27         65         2         0.5069         0.4202         0.579           WP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           WP / ffANN         51         19         73         1         0.4861         0.4113         0.588           max / FP         52         0         92         0         0.3611         0.3611         0.638           max / FDS         52         0		ffANN / ffANN	38	50	42	14	0.6111	0.4750	0.5250
avg / IANN         31         32         00         1         0.5/64         0.4395         0.540           avg / RND         51         32         60         1         0.5764         0.4395         0.540           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           WP / FDSS         50         27         65         2         0.5347         0.4348         0.565           mdn / FP         50         23         69         2         0.5069         0.4202         0.579           WP / FND         51         20         72         1         0.4931         0.4146         0.585           WP / RND         51         120         72         1         0.4931         0.4146         0.585           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           ffANN / FP         16         49         43         36         0.4146         0.583           max / ffANN         52         0         92         0         0.3611         0.3611         0.6389           max / ffANN         52         0         92		avg / FDSS	50	37	55	2	0.6042	0.4762	0.5238
TS         mdn / FDSS         50         27         65         2         0.5347         0.4348         0.565           VP / FDSS         50         27         65         2         0.5347         0.4348         0.565           mdn / FP         50         23         69         2         0.5069         0.4202         0.579           VP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           WP / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           max / FDS         52         0         92         0         0.3611         0.3611         0.3611         0.638           max / FDS         52         0         92         0         0.3611         0.3611         0.638           max / fANN         52         0         92         0         0.3611         0.3611         0.638           max / fANN		avg / IIAININ avg / RND	51	32	60	1	0.5764	0.4595	0.5405
VP / FDSS         50         27         65         2         0.5347         0.4348         0.565           mdn / FP         50         23         69         2         0.5069         0.4202         0.579           WP / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           VP / RND         51         20         72         1         0.4931         0.4146         0.585           WP / ffANN         51         19         73         1         0.4861         0.4113         0.588           max / FP         52         0         92         0         0.3611         0.3611         0.6381           max / FDS         52         0         92         0         0.3611         0.3611         0.6388           max / ffANN         52         0         92         0         0.3611         0.3611         0.6388           max / RND         52         0         92         0         52         0.6389         0.0000         0.0000           ffANN / fANN         0	TS	mdn / FDSS	50	27	65	2	0.5347	0.4348	0.5652
Intern (1)         10         20         23         69         2         0.0009         0.4202         0.579           mdn / RND         51         20         72         1         0.4931         0.4146         0.585           VP / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           VP / ffANN         51         19         73         1         0.4861         0.4113         0.588           ffANN / FP         16         49         43         36         0.4514         0.2712         0.728           max / FDS         52         0         92         0         0.3611         0.3611         0.6381           max / FDS         52         0         92         0         0.3611         0.3611         0.6381           max / RND         52         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FDS         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FAN		VP / FDSS	50	27	65	$\begin{vmatrix} 2 \\ 2 \end{vmatrix}$	0.5347	0.4348	0.5652
mdn / RND         51         20         72         1         0.4931         0.4146         0.8855           VP / RND         51         20         72         1         0.4931         0.4146         0.5855           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           VP / ffANN         51         19         73         1         0.4861         0.4113         0.588           ffANN / FP         16         49         43         36         0.4514         0.2712         0.728           max / FDS         52         0         92         0         0.3611         0.3611         0.638           max / FDSS         52         0         92         0         0.3611         0.3611         0.638           max / RND         52         0         92         0         52         0.6389         0.0000         0.000           ffANN / FDS         0         92         0         52         0.6389         0.0000         0.000           ffANN / FAND         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDSS         0		VP / FP	50	23	69	2	0.5069	0.4202	0.5798
VP / RND         51         20         72         1         0.4931         0.4146         0.585           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           VP / ffANN         51         19         73         1         0.4861         0.4113         0.588           ffANN / FP         16         49         43         36         0.4514         0.2712         0.728           max / FP         52         0         92         0         0.3611         0.3611         0.638           max / ffANN         52         0         92         0         0.3611         0.3611         0.638           max / ffANN         52         0         92         0         0.3611         0.3611         0.638           max / ffANN         52         0         92         0         52         0.6389         0.0000         0.000           ffANN / FDS         0         92         0         52         0.6389         0.0000         0.000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.000           FDSS / FP         0		mdn / RND	51	20	72	1	0.4931	0.4146	0.5854
Induit / ITANN         51         19         73         1         0.4861         0.4113         0.588           VP / ffANN         51         19         73         1         0.4861         0.4113         0.588           ffANN / FP         16         49         43         36         0.4514         0.2712         0.728           max / FDSS         52         0         92         0         0.3611         0.3611         0.638           max / FDSS         52         0         92         0         0.3611         0.3611         0.638           max / RND         52         0         92         0         0.3611         0.3611         0.638           max / RND         52         0         92         0         0.3611         0.3611         0.638           max / RND         52         0         92         0         52         0.6389         0.0000         0.000           ffANN / FDS         0         92         0         52         0.6389         0.0000         0.000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDS         0		VP/RND mdn/ffANN	51	20	72	1	0.4931	0.4146	0.5854
ffANN / FP         16         49         43         36         0.4514         0.2712         0.728: max / FDS           max / FDSS         52         0         92         0         0.3611         0.3611         0.638: max / ffANN           max / ffANN         52         0         92         0         0.3611         0.3611         0.638: max / ffANN / ffANN           ffANN / FDSS         0         92         0         0.3611         0.3611         0.638: max / ffANN / ffANN           ffANN / FDSS         0         92         0         52         0.6389         0.0000         0.0000           ffANN / ffANN         0         92         0         52         0.6389         0.0000         0.0000           ffANN / ffANN         0         92         0         52         0.6389         0.0000         0.0000           ffANN / ffANN         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FDS         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FDS         0         92         0         52         0.6389         0.0000         0.0000		VP / ffANN	51	19	73	1 1	0.4861	0.4113	0.5887
max / FP         52         0         92         0         0.3611         0.3611         0.6381           max / FDSS         52         0         92         0         0.3611         0.3611         0.6381           max / ffANN         52         0         92         0         0.3611         0.3611         0.6381           max / RND         52         0         92         0         0.3611         0.3611         0.6381           max / RND         52         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FP         0         92         0         52         0.6389         0.0000         0.0000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.0000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.0000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / RND         0 <td></td> <td>ffANN / FP</td> <td>16</td> <td>49</td> <td>43</td> <td>36</td> <td>0.4514</td> <td>0.2712</td> <td>0.7288</td>		ffANN / FP	16	49	43	36	0.4514	0.2712	0.7288
Inax / FLSS         52         0         92         0         0.3611         0.3611         0.6381           max / ffANN         52         0         92         0         0.3611         0.3611         0.6381           max / RND         52         0         92         0         0.3611         0.3611         0.6381           ffANN / FDSS         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FP         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FP         0         92         0         52         0.6389         0.0000         0.0000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.0000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDS         0         92         0         52         0.6389         0.0000         0.000           FDSS / RND         0         92         0         52         0.6389         0.0000         0.000           avg / FDS         50         37<		max / FP	52		92		0.3611	0.3611	0.6389
max / RND         52         0         92         0         0.3611         0.3611         0.6381           ffANN / FDSS         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FDSS         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FANN         0         92         0         52         0.6389         0.0000         0.0000           ffANN / ffANN         0         92         0         52         0.6389         0.0000         0.000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.000           fbSS / FDS         0         92         0         52         0.6389         0.0000         0.000           geng / FDS         50 <td< td=""><td></td><td>max / FDSS max / ffANN</td><td>52</td><td>0</td><td>92 92</td><td></td><td>0.3011</td><td>0.3011</td><td>0.6389</td></td<>		max / FDSS max / ffANN	52	0	92 92		0.3011	0.3011	0.6389
ffANN / FDSS         0         92         0         52         0.6389         0.0000         0.0000           ffANN / FP         0         92         0         52         0.6389         0.0000         0.0000           ffANN / ffANN         0         92         0         52         0.6389         0.0000         0.0000           ffANN / ffANN         0         92         0         52         0.6389         0.0000         0.0000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / ffANN         0         92         0         52         0.6389         0.0000         0.0000           FDSS / ffANN         0         92         0         52         0.6389         0.0000         0.0000           avg / FDS         50         37         55         2         0.6111         0.4808         0.519           avg / FDSS         50         37         55         2         0.6042         0.4762         0.523           avg / RND         51		max / RND	52	0	92	0	0.3611	0.3611	0.6389
ITANN / FP         0         92         0         52         0.6389         0.0000         0.0000           ffANN / ffANN         0         92         0         52         0.6389         0.0000         0.0000           ffANN / RND         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FP         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / ffANN         0         92         0         52         0.6389         0.0000         0.0000           FDSS / ffANN         0         92         0         52         0.6389         0.0000         0.0000           avg / FDS         50         37         55         2         0.6111         0.4808         0.519           avg / ffANN         51         32         60         1         0.5625         0.4513         0.548           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5655           VP / FDSS         50         <		ffANN / FDSS	0	92	0	52	0.6389	0.0000	0.0000
GPR         IffANN / RND         0         92         0         52         0.0507         0.0000         0.0000           FDSS / FP         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / RND         0         92         0         52         0.6389         0.0000         0.0000           avg / FP         50         38         54         2         0.6111         0.4808         0.5192           avg / FDS         50         37         55         2         0.6042         0.4762         0.5233           avg / fANN         51         32         60         1         0.5625         0.4513         0.548           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5652           WP / FDSS         50		ITANN / FP ITANN / ITANN	0	92 92	0	52	0.6389	0.0000	0.0000
FDSS / FP         0         92         0         52         0.6389         0.0000         0.0000           FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / ffANN         0         92         0         52         0.6389         0.0000         0.0000           FDSS / RND         0         92         0         52         0.6389         0.0000         0.0000           avg / FP         50         38         54         2         0.6111         0.4808         0.519           avg / FDSS         50         37         55         2         0.6042         0.4762         0.523           avg / ffANN         51         32         60         1         0.5764         0.4595         0.540           avg / RND         51         30         62         1         0.5625         0.4513         0.548           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5657           VP / FDSS         50         27         65         2         0.5069         0.4202         0.5799           WP / FP         50         23	GPR	ffANN / RND	0	92	0	52	0.6389	0.0000	0.0000
FDSS / FDSS         0         92         0         52         0.6389         0.0000         0.0000           FDSS / ffANN         0         92         0         52         0.6389         0.0000         0.0000           FDSS / RND         0         92         0         52         0.6389         0.0000         0.0000           avg / FP         50         38         54         2         0.6111         0.4808         0.5192           avg / FDSS         50         37         55         2         0.6042         0.4762         0.523           avg / ffANN         51         32         60         1         0.5764         0.4595         0.540           avg / RND         51         30         62         1         0.5625         0.4513         0.548           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5652           WP / FDSS         50         27         65         2         0.5069         0.4202         0.5799           WP / FP         50         23         69         2         0.5069         0.4202         0.5799           WP / FP         50         23		FDSS / FP	0	92	0	52	0.6389	0.0000	0.0000
GPR         FDSS / RND         0         92         0         52         0.0339         0.0000         0.0000           avg / FP         50         38         54         2         0.6111         0.4808         0.519           avg / FDSS         50         37         55         2         0.6042         0.4762         0.523           avg / FDSS         50         37         55         2         0.6042         0.4762         0.523           avg / RND         51         32         60         1         0.5764         0.4595         0.540           avg / RND         51         30         62         1         0.5625         0.4513         0.548           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5655           VP / FDSS         50         27         65         2         0.5069         0.4202         0.579           mdn / FP         50         23         69         2         0.5069         0.4202         0.579           mdn / RND         51         21         71         1         0.5000         0.4180         0.582           VP / RND         51		FDSS / FDSS FDSS / #ANN	0	92 92	0	52	0.6389	0.0000	0.0000
avg / FP         50         38         54         2         0.6111         0.4808         0.5192           avg / FDSS         50         37         55         2         0.6042         0.4762         0.5233           avg / ffANN         51         32         60         1         0.5764         0.4595         0.5403           avg / RND         51         30         62         1         0.5625         0.4513         0.5483           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5653           WP / FDSS         50         27         65         2         0.5069         0.4202         0.5794           WP / FDS         50         23         69         2         0.5069         0.4202         0.5794           WP / FP         50         23         69         2         0.5069         0.4202         0.5794           Mdn / RND         51         21         71         1         0.5000         0.4180         0.5824           WP / RND         51         21         71         1         0.5000         0.4180         0.5824           Mdn / ffANN         51         19 <td>FDSS / RND</td> <td>0</td> <td>92</td> <td>0</td> <td>52</td> <td>0.6389</td> <td>0.0000</td> <td>0.0000</td>		FDSS / RND	0	92	0	52	0.6389	0.0000	0.0000
avg / FDSS         50         37         55         2         0.6042         0.4762         0.5233           avg / ffANN         51         32         60         1         0.5764         0.4595         0.5403           avg / RND         51         30         62         1         0.5625         0.4513         0.5483           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5655           VP / FDSS         50         27         65         2         0.5069         0.4202         0.5799           mdn / FP         50         23         69         2         0.5069         0.4202         0.5799           WP / FP         50         23         69         2         0.5069         0.4202         0.5799           mdn / RND         51         21         71         1         0.5000         0.4180         0.5829           WP / RND         51         21         71         1         0.5000         0.4180         0.5829           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.5889           Max / FDSS         52         0 </td <td>avg / FP</td> <td>50</td> <td>38</td> <td>54</td> <td>2</td> <td>0.6111</td> <td>0.4808</td> <td>0.5192</td>		avg / FP	50	38	54	2	0.6111	0.4808	0.5192
avg / IIANN         51         52         60         1         0.5764         0.4595         0.540           avg / RND         51         30         62         1         0.5625         0.4513         0.548           mdn / FDSS         50         27         65         2         0.5347         0.4348         0.5655           VP / FDSS         50         27         65         2         0.5347         0.4348         0.5655           mdn / FP         50         23         69         2         0.5069         0.4202         0.5794           VP / FP         50         23         69         2         0.5069         0.4202         0.5794           Mdn / RND         51         21         71         1         0.5000         0.4180         0.5824           VP / RND         51         21         71         1         0.5000         0.4180         0.5824           Mdn / ffANN         51         19         73         1         0.4861         0.4113         0.588           Max / FDSS         52         0         92         0         0.3611         0.3611         0.638*           max / FDSS         52         0		avg / FDSS	50	37	55	2	0.6042	0.4762	0.5238
Main         FDSS         50         27         65         2         0.5347         0.4348         0.5653           VP / FDSS         50         27         65         2         0.5347         0.4348         0.5653           WP / FDSS         50         27         65         2         0.5347         0.4348         0.5653           Mdn / FP         50         23         69         2         0.5069         0.4202         0.5799           WP / FP         50         23         69         2         0.5069         0.4202         0.5799           Mdn / RND         51         21         71         1         0.5000         0.4180         0.5820           WP / RND         51         21         71         1         0.5000         0.4180         0.5820           Mdn / ffANN         51         19         73         1         0.4861         0.4113         0.5887           WP / ffANN         51         19         73         1         0.4861         0.4113         0.5887           max / FDSS         52         0         92         0         0.3611         0.3611         0.6389           max / ffANN         52		avg / IIAININ avg / RND	51	30	62	1 1	0.5704	0.4595	0.5405
VP / FDSS         50         27         65         2         0.5347         0.4348         0.5655           mdn / FP         50         23         69         2         0.5069         0.4202         0.5795           VP / FP         50         23         69         2         0.5069         0.4202         0.5795           mdn / RND         51         21         71         1         0.5000         0.4180         0.5826           VP / RND         51         21         71         1         0.5000         0.4180         0.5826           Mdn / ffANN         51         19         73         1         0.4861         0.4113         0.5886           Max / FDSS         52         0         92         0         0.3611         0.3611         0.6386           max / FDSS         52         0         92         0         0.3611         0.3611         0.6386		mdn / FDSS	50	27	65	2	0.5347	0.4348	0.5652
Iman / FP         50         23         69         2         0.5069         0.4202         0.5793           VP / FP         50         23         69         2         0.5069         0.4202         0.5793           mdn / RND         51         21         71         1         0.5000         0.4180         0.5823           VP / RND         51         21         71         1         0.5000         0.4180         0.5823           Mdn / ffANN         51         19         73         1         0.4861         0.4113         0.5883           WP / ffANN         51         19         73         1         0.4861         0.4113         0.5883           WP / ffANN         51         19         73         1         0.4861         0.4113         0.5883           max / FDSS         52         0         92         0         0.3611         0.3611         0.6383           max / FP         52         0         92         0         0.3611         0.3611         0.6383		VP / FDSS	50	27	65	2	0.5347	0.4348	0.5652
mdn / RND         51         21         71         1         0.5000         0.4180         0.5820           VP / RND         51         21         71         1         0.5000         0.4180         0.5820           WP / RND         51         21         71         1         0.5000         0.4180         0.5820           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.5880           VP / ffANN         51         19         73         1         0.4861         0.4113         0.5880           max / FDSS         52         0         92         0         0.3611         0.3611         0.6380           max / FP         52         0         92         0         0.3611         0.3611         0.6380           max / ffANN         52         0         92         0         0.3611         0.3611         0.6380		man / FP VP / FP	50	23	69 69	$\frac{2}{2}$	0.5069	0.4202	0.5798
VP / RND         51         21         71         1         0.5000         0.4180         0.5820           mdn / ffANN         51         19         73         1         0.4861         0.4113         0.5880           VP / ffANN         51         19         73         1         0.4861         0.4113         0.5880           max / FDSS         52         0         92         0         0.3611         0.3611         0.6380           max / FP         52         0         92         0         0.3611         0.3611         0.6380           max / ffANN         52         0         92         0         0.3611         0.3611         0.6380		mdn / RND	51	21	71	1	0.5000	0.4180	0.5820
India / ITANN         51         19         73         1         0.4861         0.4113         0.588           VP / ffANN         51         19         73         1         0.4861         0.4113         0.588           max / FDSS         52         0         92         0         0.3611         0.3611         0.638           max / FP         52         0         92         0         0.3611         0.638           max / ffANN         52         0         92         0         0.3611         0.638		VP/RND	51	21	71	1	0.5000	0.4112	0.5820
max / FDSS         52         0         92         0         0.3611         0.3631           max / FP         52         0         92         0         0.3611         0.3611         0.638           max / FP         52         0         92         0         0.3611         0.3611         0.638           max / FP         52         0         92         0         0.3611         0.638           max / ffANN         52         0         92         0         0.3611         0.638		man / ffANN VP / ffANN	51	19 19	73 73		0.4861	0.4113	0.5887
max / FP         52         0         92         0         0.3611         0.3611         0.638           max / ffANN         52         0         92         0         0.3611         0.3611         0.638		max / FDSS	52	0	92	0	0.3611	0.3611	0.6389
max / #ANN    52   0   92   0    0.3611   0.3611   0.638		max / FP	52	0	92	0	0.3611	0.3611	0.6389
max / RND 52 0 92 0 0.3611 0.3611 0.638		max / ffANN max / RND	52 52	0	92 92	0	0.3611	0.3611	0.6389

Table 6: Complete list of results obtained over the validation data set, in terms of confusion matrix (TP,TN,FP,FM), accuracy (ACC), root-mean square error (RMSE) and area under the ROC curve (AUC), for each CDM ( $\Omega$ ) approach when combined with a given NPDM ( $\alpha$ ) method.



Figure 6: Results of the VS agent over the validation data set. In (a) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.



Figure 7: Results of the IR agent over the validation data set. In (*a*) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.



Figure 8: Results of the UV agent over the validation data set. In (*a*) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method



Figure 9: Results of the TS agent over the validation data set. In (a) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.



Figure 10: Results of the GPR agent over the validation data set. In (a) black points refer to LDM. As for CDM, the red points indicate the FPR-TPR values obtained via the aggregation methods, blue points those with a neural system (ffANN) and green ones those with a genetic fuzzy system (FDSS). The ROC curves in the other diagrams refer to the four possible NPDM systems used in conjunction with an indicated LDM or CDM system, i.e. the light-blue curve is obtained by means a ffANN, the green curve by means of the random (RDN) method, the orange curve with a FDSS and the red one with the fixed position (FP) method.

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