The Fifth International Verification of Neural Networks Competition (VNN-COMP 2024): Summary and Results

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Abstract

This report summarizes the fifth International Verification of Neural Networks Competition (VNN-COMP 2024), held as a part of the 6th Workshop on Formal Methods for ML-Enabled Autonomous Systems (FoMLAS) that was collocated with the 35th International Conference on Computer-Aided Verification (CAV). The goal of the competition is to provide an objective comparison of the state-of-the-art methods in neural network verification, in terms of scalability and speed. Along this line, we used standard formats (ONNX for neural networks and VNNLIB for specifications), standard hardware (all tools are run by the organizers on AWS), and tool parameters provided by the tool authors. This report summarizes the rules, benchmarks, participating tools, results, and lessons learned from this competition.

1 Total Score

Table 1: Overall Score

#	Tool	Score
1	α-β-CROWN	1600.0
2	NeuralSAT	1360.1
3	PyRAT	1218.5
4	CORA	954.6
5	nnenum	740.8
6	NNV	697.3
7	SobolBox	529.0

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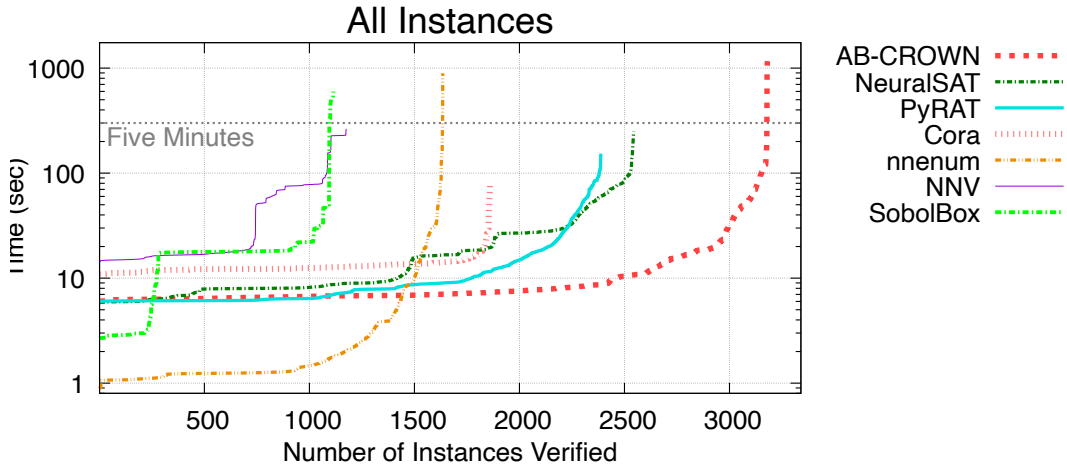[¶]A. Wu is with Stanford University, `haozewu@stanford.edu`.

All Instances

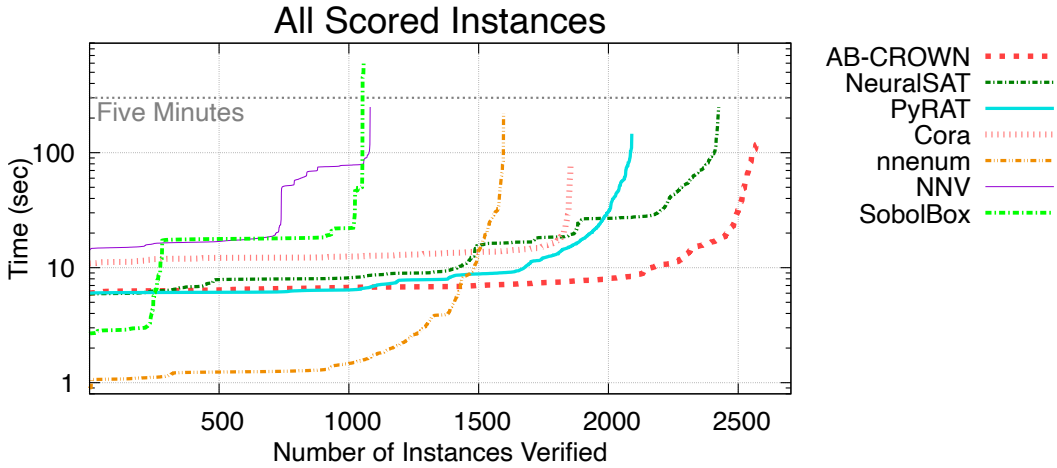Figure 1: Cactus Plot for All Instances.

All Scored Instances

Figure 2: Cactus Plot for All Scored Instances.

2 Scored Benchmarks

Table 2: Benchmark `2025-acasxu-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	nnenum	139	47	0	0	1860	100.0	100.0%
2	NeuralSAT	139	47	0	0	1860	100.0	100.0%
3	α-β-CROWN	139	47	0	0	1860	100.0	100.0%
4	PyRAT	139	46	0	0	1850	99.5	99.5%
5	CORA	137	46	0	0	1830	98.4	98.4%
6	SobolBox	118	43	0	1	1460	78.5	86.6%
7	NNV	71	39	0	0	1100	59.1	59.1%
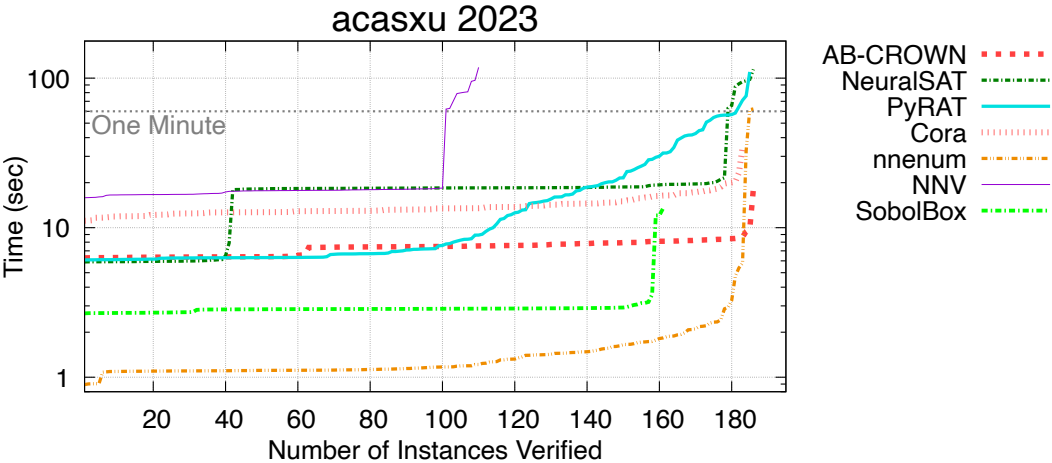
Figure 3: Cactus Plot for acasxu 2023.

Table 3: Benchmark `2025-cersyve`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	6	6	0	0	120	100.0	100.0%
2	NeuralSAT	4	6	0	0	100	83.3	83.3%
3	PyRAT	2	6	0	0	80	66.7	66.7%
4	SobolBox	0	6	0	0	60	50.0	50.0%
5	NNV	0	3	0	0	30	25.0	25.0%
6	CORA	6	5	0	1	-40	0	91.7%
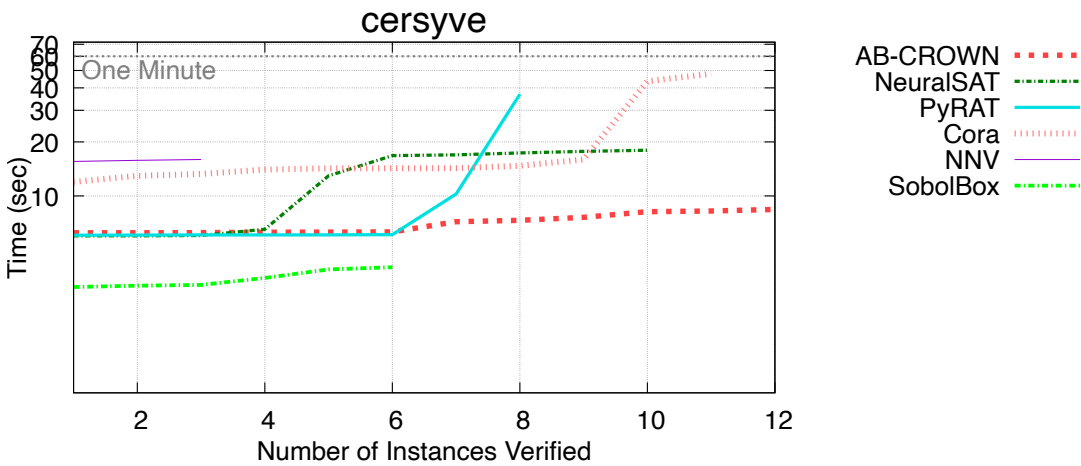
Figure 4: Cactus Plot for cersyve.

Table 4: Benchmark `2025-cgan-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	PyRAT	9	12	0	0	210	100.0	100.0%
2	NeuralSAT	9	12	0	0	210	100.0	100.0%
3	α-β-CROWN	9	12	0	0	210	100.0	100.0%
4	SobolBox	9	10	0	0	190	90.5	90.5%
5	nnenum	7	10	0	0	170	81.0	81.0%
6	NNV	5	11	0	0	160	76.2	76.2%
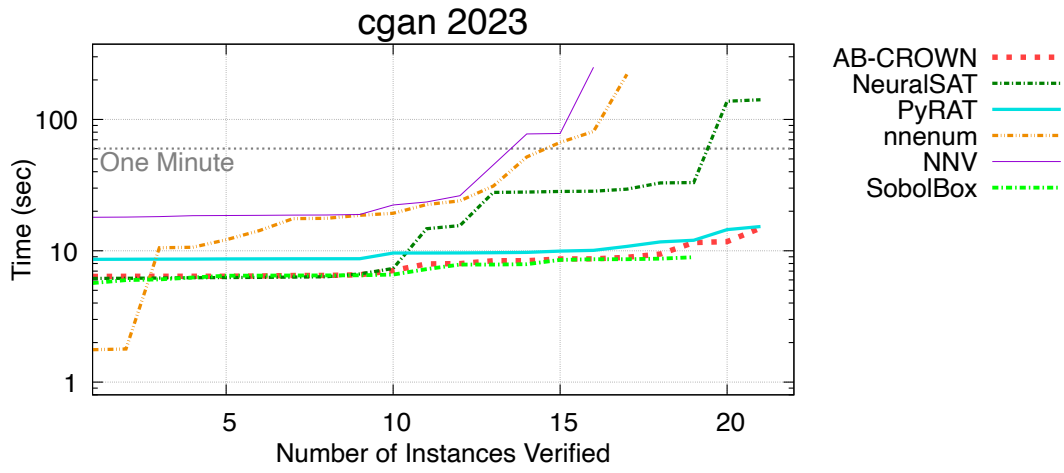
Figure 5: Cactus Plot for cgan 2023.

Table 5: Benchmark `2025-cifar100-2024`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	100	29	0	0	1290	100.0	64.5%
2	PyRAT	61	25	0	0	860	66.7	43.0%
3	NeuralSAT	87	25	0	4	520	40.3	56.0%
4	CORA	0	10	0	0	100	7.8	5.0%
5	NNV	171	0	0	19	-1140	0	85.5%
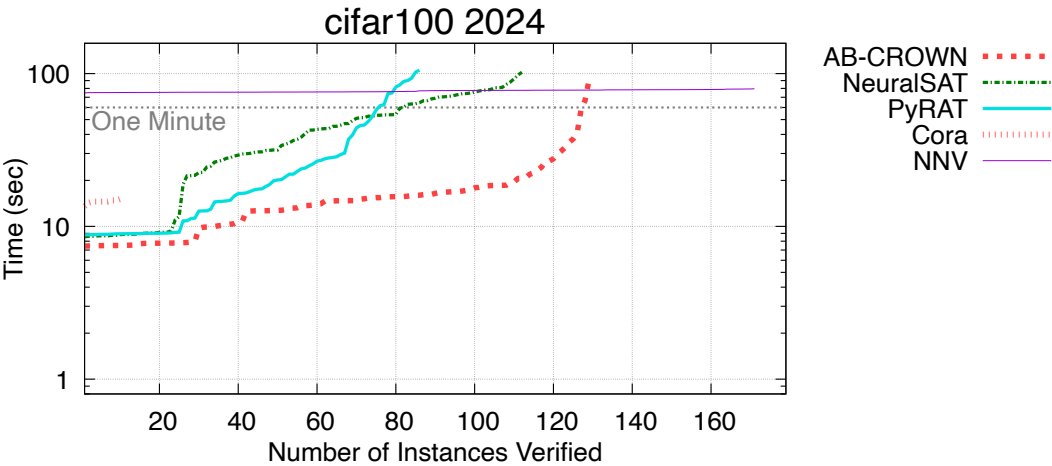
Figure 6: Cactus Plot for cifar100 2024.

Table 6: Benchmark `2025-collins-rul-cnn-2022`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	nnenum	39	23	0	0	620	100.0	100.0%
2	PyRAT	39	23	0	0	620	100.0	100.0%
3	NeuralSAT	39	23	0	0	620	100.0	100.0%
4	NNV	39	23	0	0	620	100.0	100.0%
5	CORA	39	23	0	0	620	100.0	100.0%
6	α-β-CROWN	39	23	0	0	620	100.0	100.0%
7	SobolBox	19	15	0	0	340	54.8	54.8%
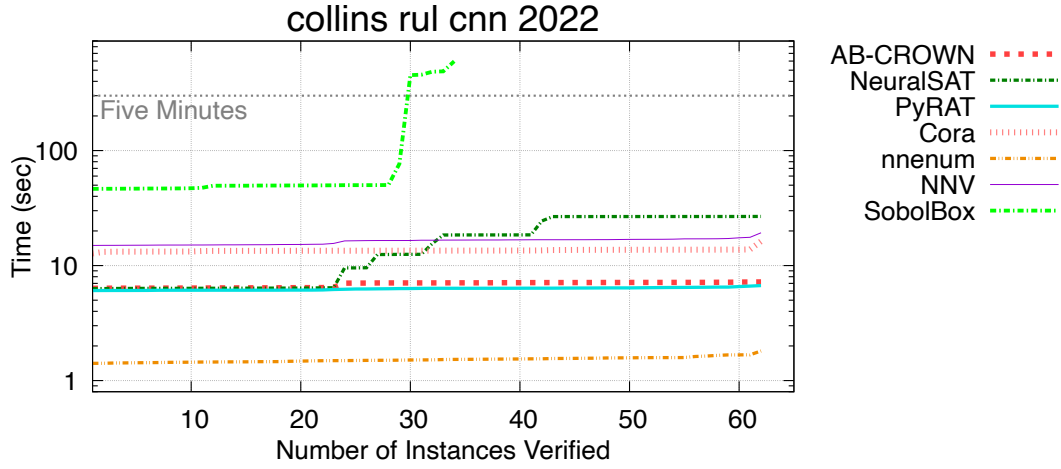
Figure 7: Cactus Plot for collins rul cnn 2022.

Table 7: Benchmark `2025-cora-2024`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	22	131	0	0	1530	100.0	85.0%
2	NeuralSAT	21	131	0	0	1520	99.3	84.4%
3	PyRAT	20	128	0	0	1480	96.7	82.2%
4	CORA	19	124	0	0	1430	93.5	79.4%
5	NNV	19	57	0	0	760	49.7	42.2%
6	nnenum	19	4	0	0	230	15.0	12.8%
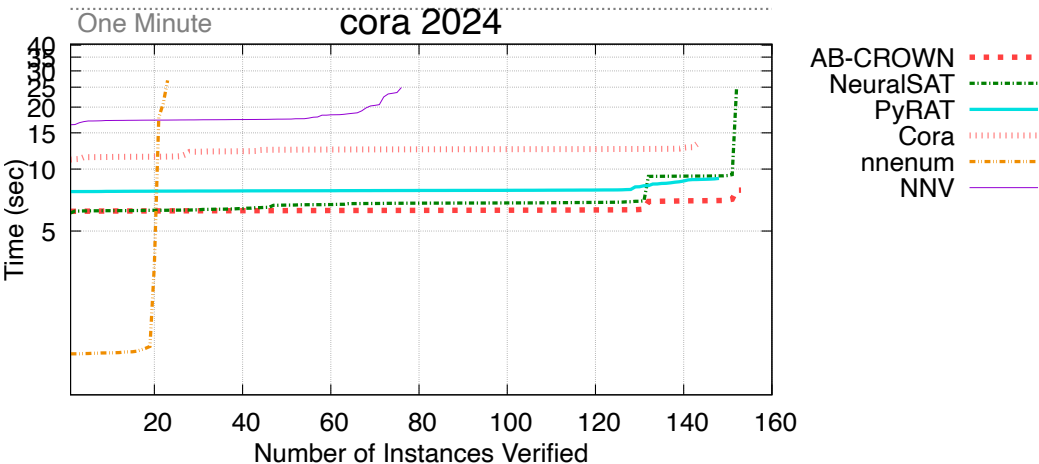
Figure 8: Cactus Plot for cora 2024.

Table 8: Benchmark `2025-dist-shift-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	NeuralSAT	65	7	0	0	720	100.0	100.0%
2	CORA	65	7	0	0	720	100.0	100.0%
3	α-β-CROWN	65	7	0	0	720	100.0	100.0%
4	PyRAT	64	7	0	0	710	98.6	98.6%
5	NNV	50	4	0	0	540	75.0	75.0%
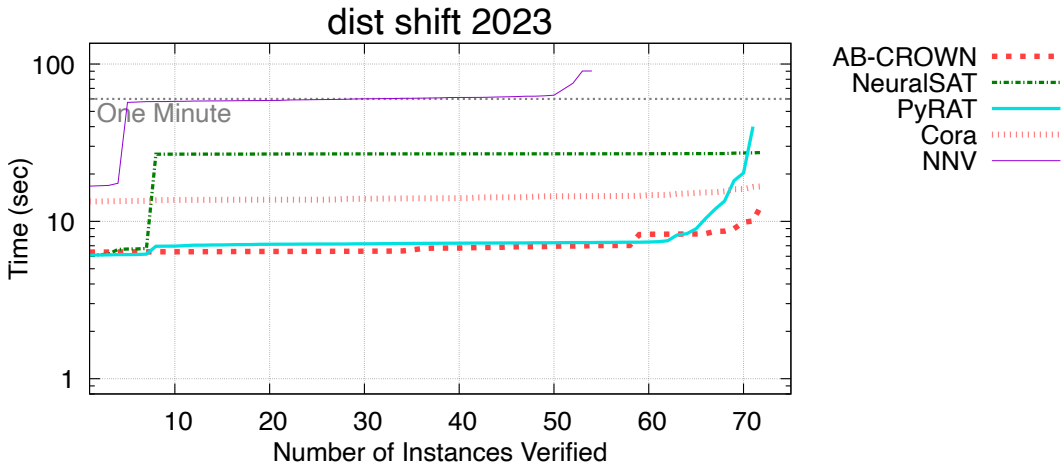
Figure 9: Cactus Plot for dist shift 2023.

Table 9: Benchmark `2025-linearizenn-2024`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	nnenum	59	1	0	0	600	100.0	100.0%
2	SobolBox	59	1	0	0	600	100.0	100.0%
3	PyRAT	59	1	0	0	600	100.0	100.0%
4	NeuralSAT	59	1	0	0	600	100.0	100.0%
5	CORA	59	1	0	0	600	100.0	100.0%
6	α-β-CROWN	59	1	0	0	600	100.0	100.0%
7	NNV	40	1	0	0	410	68.3	68.3%
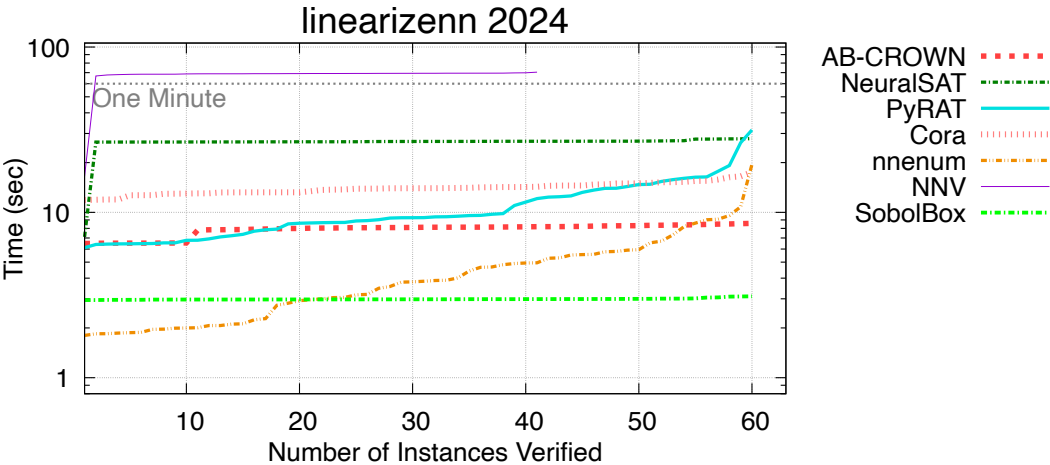
Figure 10: Cactus Plot for linearizenn 2024.

Table 10: Benchmark `2025-malbeware`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	131	19	0	0	1500	100.0	100.0%
2	NeuralSAT	127	19	0	0	1460	97.3	97.3%
3	PyRAT	121	18	0	0	1390	92.7	92.7%
4	nnenum	125	12	0	0	1370	91.3	91.3%
5	CORA	88	9	0	0	970	64.7	64.7%
6	NNV	49	4	0	0	530	35.3	35.3%
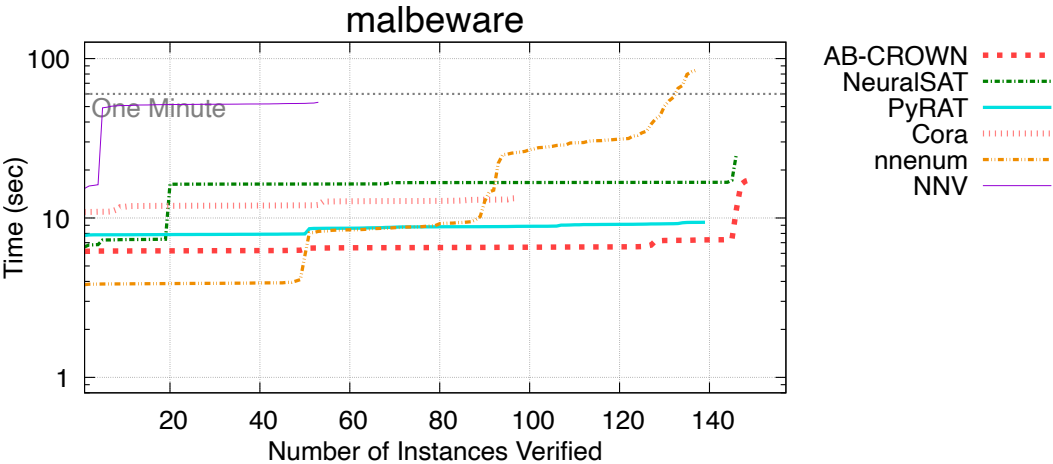
Figure 11: Cactus Plot for malbeware.

Table 11: Benchmark `2025-metaroom-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	NeuralSAT	94	5	0	0	990	100.0	99.0%
2	α-β-CROWN	94	5	0	0	990	100.0	99.0%
3	CORA	92	5	0	0	970	98.0	97.0%
4	NNV	93	2	0	0	950	96.0	95.0%
5	PyRAT	95	3	0	2	680	68.7	98.0%
6	nnenum	50	1	0	0	510	51.5	51.0%
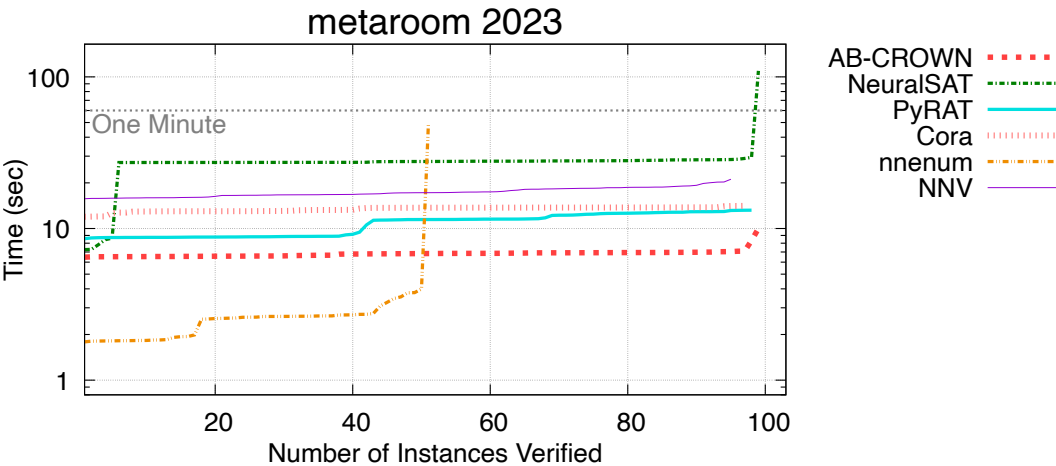
Figure 12: Cactus Plot for metaroom 2023.

Table 12: Benchmark `2025-nn4sys`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	194	0	0	0	1940	100.0	100.0%
2	NeuralSAT	120	0	0	0	1200	61.9	61.9%
3	SobolBox	107	0	0	0	1070	55.2	55.2%
4	PyRAT	40	0	0	0	400	20.6	20.6%
5	nnenum	22	0	0	0	220	11.3	11.3%
6	NNV	17	0	0	0	170	8.8	8.8%
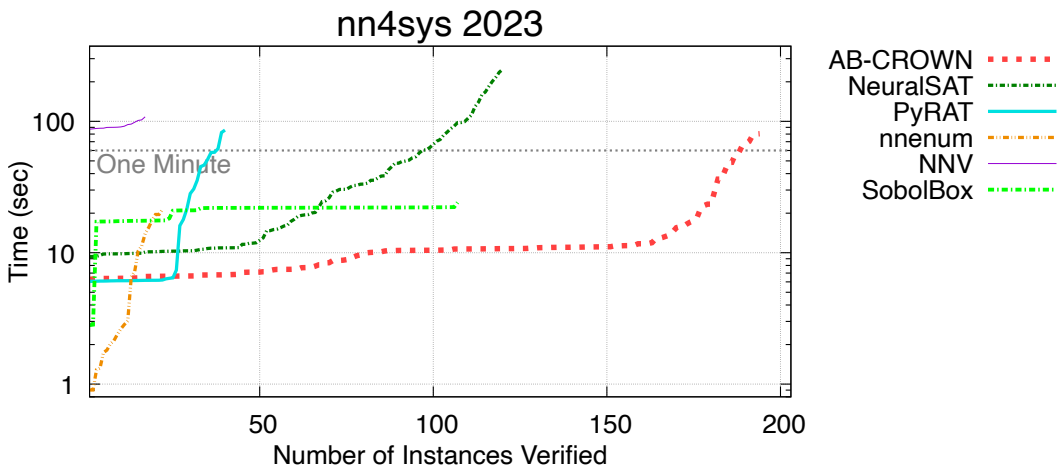
Figure 13: Cactus Plot for nn4sys 2023.

Table 13: Benchmark `2025-safenlp-2024`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	433	647	0	0	10800	100.0	100.0%
2	NeuralSAT	425	645	0	0	10700	99.1	99.1%
3	PyRAT	331	647	0	0	9780	90.6	90.6%
4	nnenum	340	636	0	0	9760	90.4	90.4%
5	CORA	338	644	0	1	9670	89.5	90.9%
6	NNV	172	176	0	0	3480	32.2	32.2%
7	SobolBox	413	215	0	403	-54170	0	58.1%
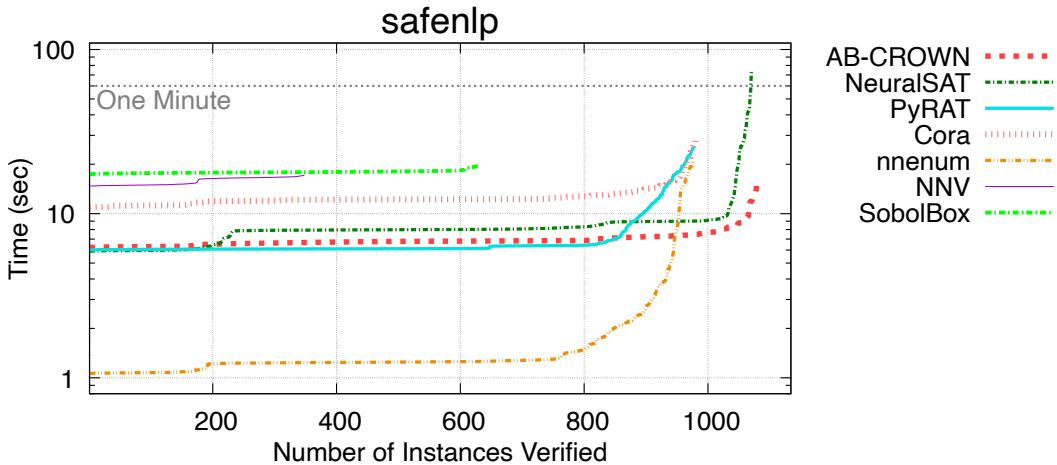
Figure 14: Cactus Plot for safenlp.

Table 14: Benchmark `2025-sat-relu`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	NeuralSAT	50	50	0	0	1000	100.0	100.0%
2	CORA	50	50	0	0	1000	100.0	100.0%
3	α-β-CROWN	50	50	0	0	1000	100.0	100.0%
4	PyRAT	9	50	0	0	590	59.0	59.0%
5	nnenum	9	35	0	0	440	44.0	44.0%
6	NNV	2	16	0	0	180	18.0	18.0%
7	SobolBox	0	10	0	33	-4850	0	10.0%
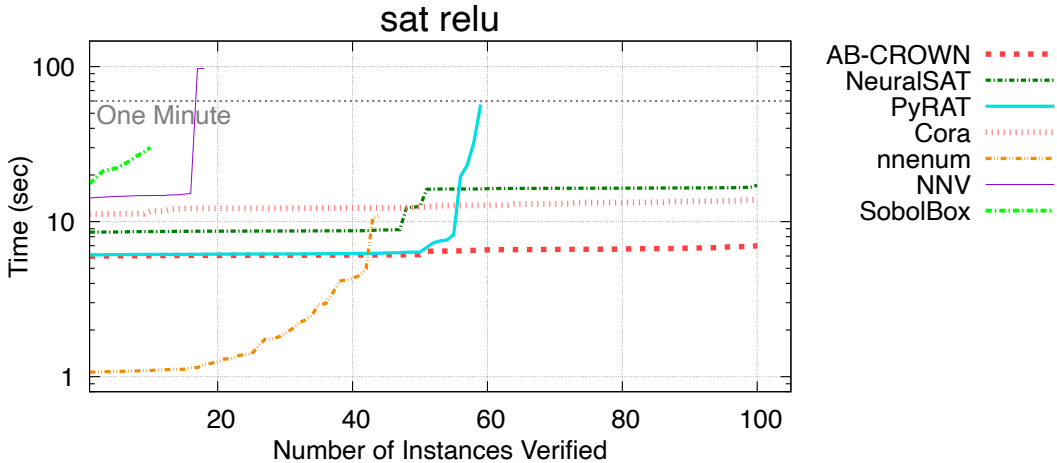
Figure 15: Cactus Plot for sat relu.

Table 15: Benchmark `2025-soundnessbench`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	0	50	0	0	500	100.0	100.0%
2	NeuralSAT	0	30	0	12	-1500	0	60.0%
3	CORA	0	0	0	18	-2700	0	0.0%
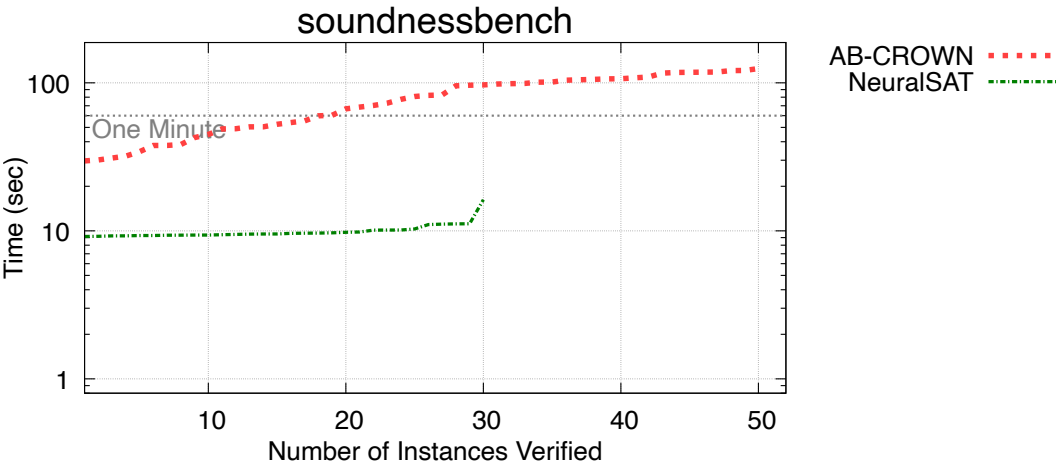
Figure 16: Cactus Plot for soundnessbench.

Table 16: Benchmark `2025-tinyimagenet-2024`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	137	38	0	0	1750	100.0	87.5%
2	NeuralSAT	116	37	0	1	1380	78.9	76.5%
3	PyRAT	68	35	0	0	1030	58.9	51.5%
4	CORA	0	5	0	0	50	2.9	2.5%
5	NNV	0	1	0	0	10	0.6	0.5%
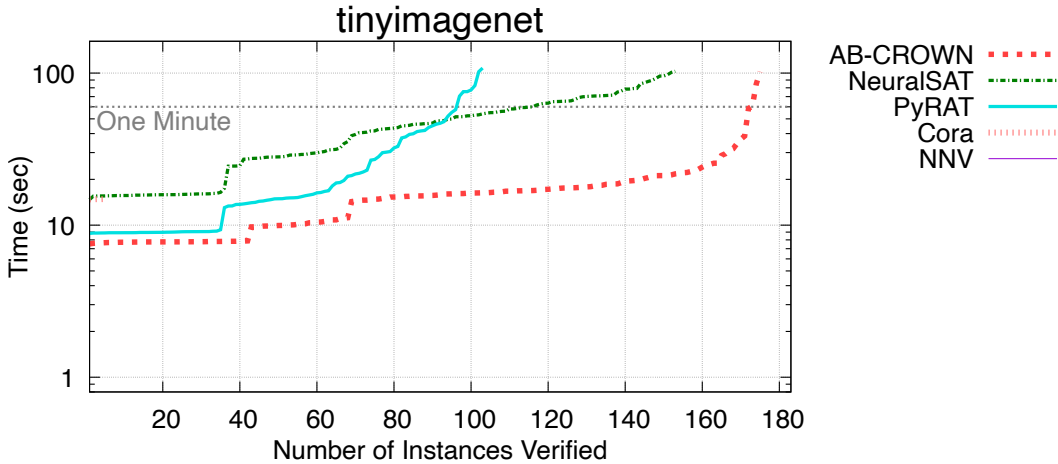
Figure 17: Cactus Plot for tinyimagenet.

Table 17: Benchmark `2025-tllverifybench-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	SobolBox	15	17	0	0	320	100.0	100.0%
2	PyRAT	15	17	0	0	320	100.0	100.0%
3	NeuralSAT	15	17	0	0	320	100.0	100.0%
4	CORA	15	17	0	0	320	100.0	100.0%
5	α-β-CROWN	15	17	0	0	320	100.0	100.0%
6	nnenum	1	17	0	0	180	56.2	56.2%
7	NNV	0	17	0	0	170	53.1	53.1%
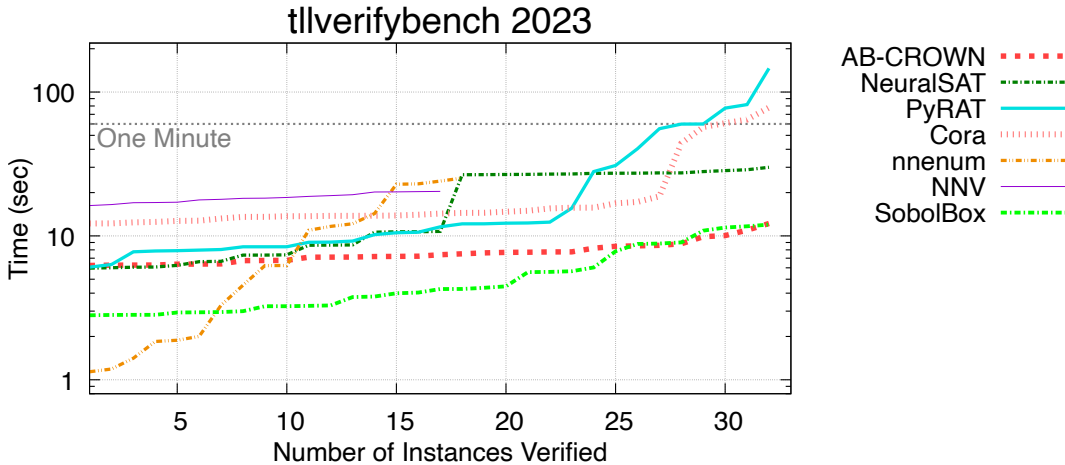
Figure 18: Cactus Plot for tllverifybench 2023.

3 Unscored Benchmarks

Table 18: Benchmark `2025-cctsdb-yolo-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	PyRAT	11	28	0	0	390	100.0	100.0%
2	α-β-CROWN	11	28	0	0	390	100.0	100.0%
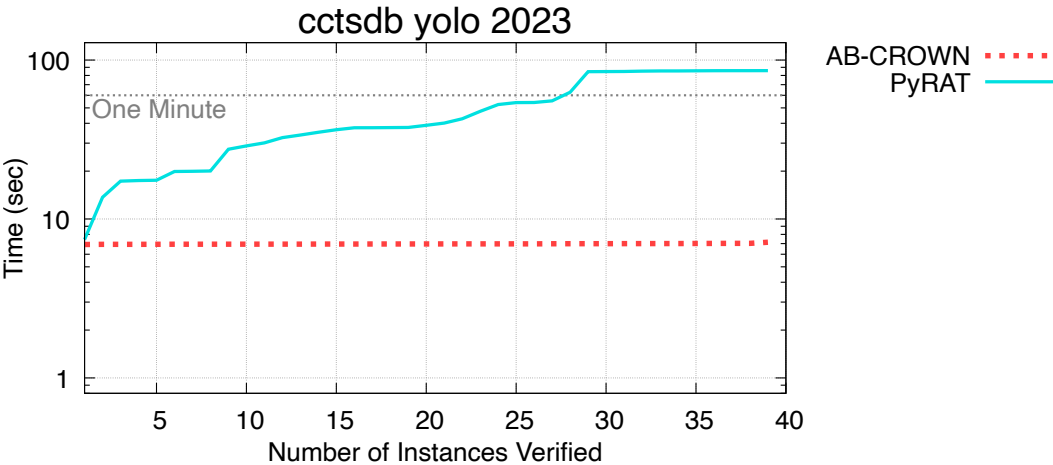
Figure 19: Cactus Plot for cctsdb yolo 2023.

Table 19: Benchmark `2025-collins-aerospace-benchmark`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	PyRAT	0	6	0	0	60	100.0	100.0%
2	α-β-CROWN	0	6	0	0	60	100.0	100.0%
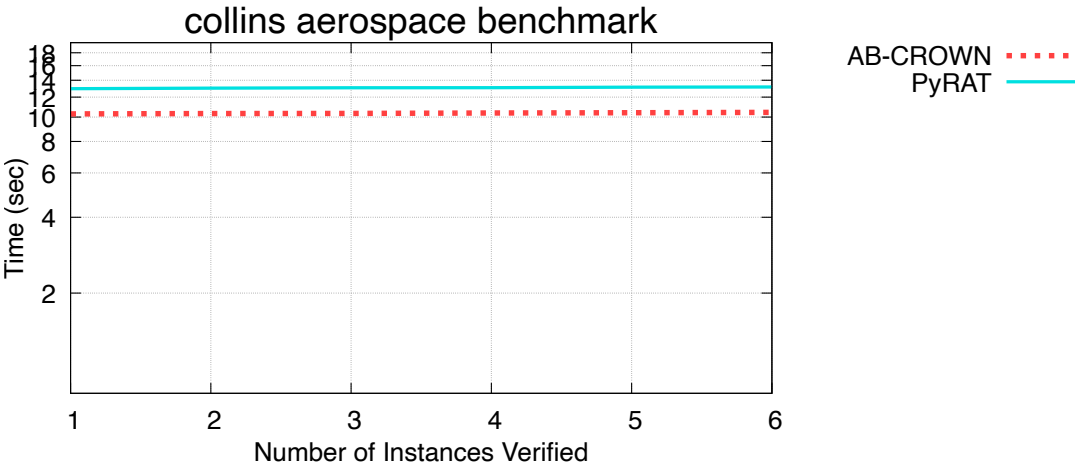
Figure 20: Cactus Plot for collins aerospace benchmark.

Table 20: Benchmark `2025-lsnc-relu`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	68	12	0	0		800	100.0	100.0%
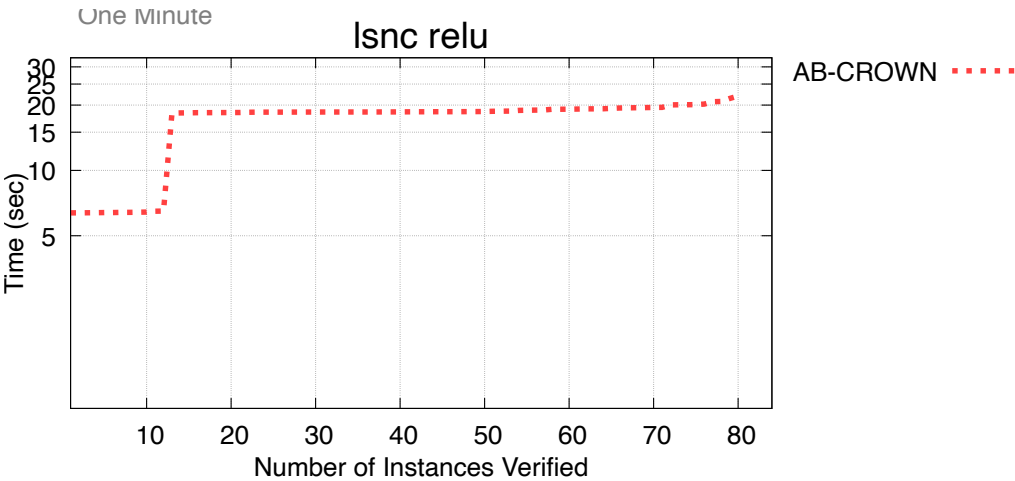
Figure 21: Cactus Plot for lsnc relu.

Table 21: Benchmark `2025-ml4acopf-2024`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	58	5	0	0	630	100.0	91.3%
2	SobolBox	54	3	0	0	570	90.5	82.6%
3	PyRAT	36	3	0	0	390	61.9	56.5%
4	NNV	17	0	0	0	170	27.0	24.6%
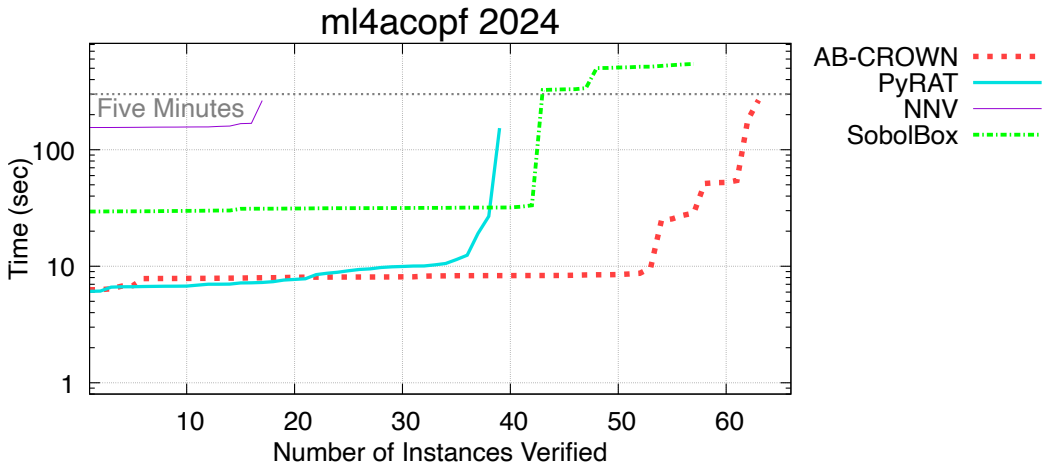
Figure 22: Cactus Plot for ml4acopf 2024.

Table 22: Benchmark `2025-relusplitter`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	151	20	0	0	1710	100.0	77.7%
2	PyRAT	61	16	0	0	770	45.0	35.0%
3	nnenum	22	2	0	0	240	14.0	10.9%
4	CORA	6	0	0	0	60	3.5	2.7%
5	NNV	0	4	0	0	40	2.3	1.8%
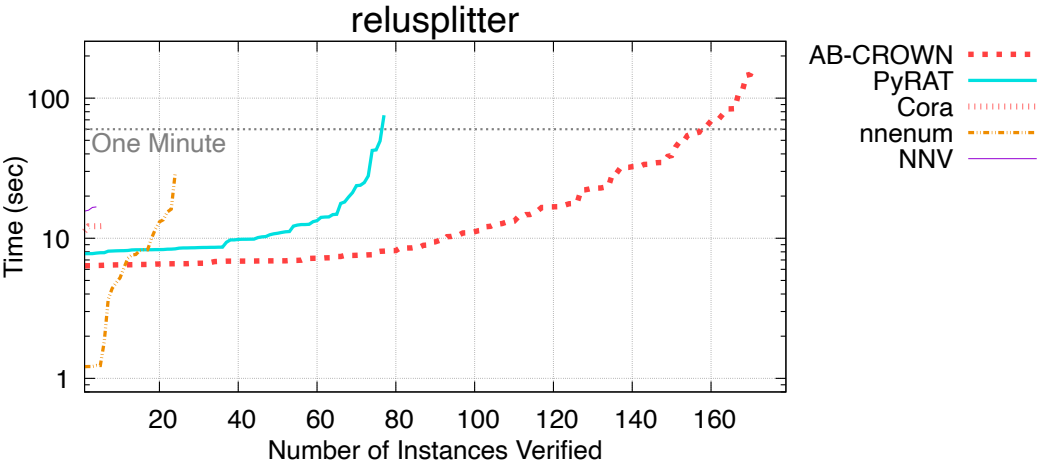
Figure 23: Cactus Plot for relusplitter.

Table 23: Benchmark `2025-traffic-signs-recognition-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	0	43	0	0	430	100.0	95.6%
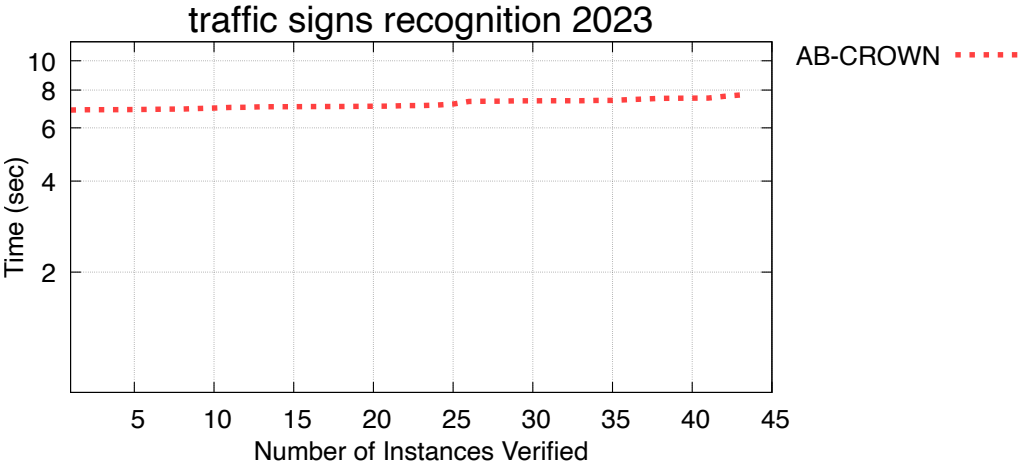
Figure 24: Cactus Plot for traffic signs recognition 2023.

Table 24: Benchmark `2025-vggnet16-2022`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	17	1	0	0	180	100.0	100.0%
2	nnenum	14	1	0	0	150	83.3	83.3%
3	PyRAT	13	1	0	0	140	77.8	77.8%
4	NNV	0	1	0	0	10	5.6	5.6%
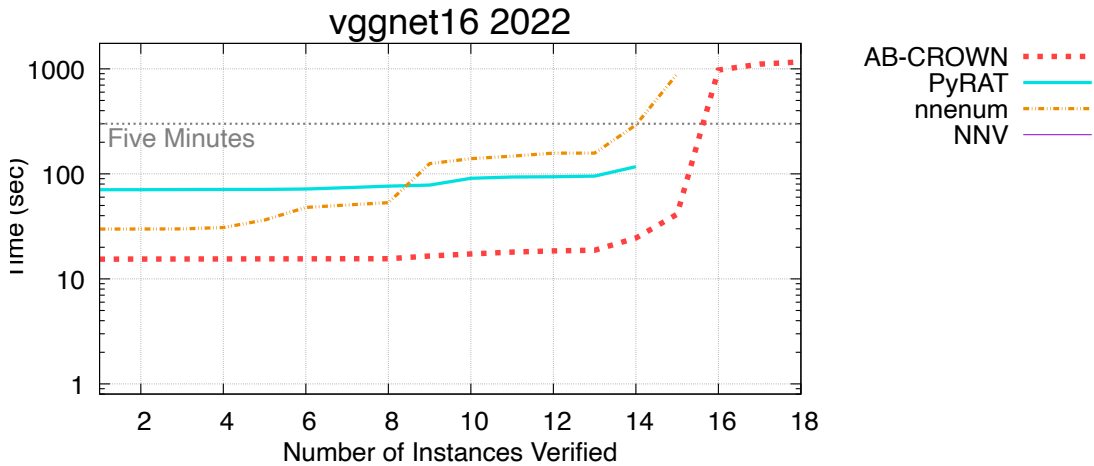
Figure 25: Cactus Plot for vggnet16 2022.

Table 25: Benchmark `2025-vit-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	α-β-CROWN	125	0	0	0	1250	100.0	62.5%
2	PyRAT	83	0	0	0	830	66.4	41.5%
3	NeuralSAT	67	0	0	0	670	53.6	33.5%
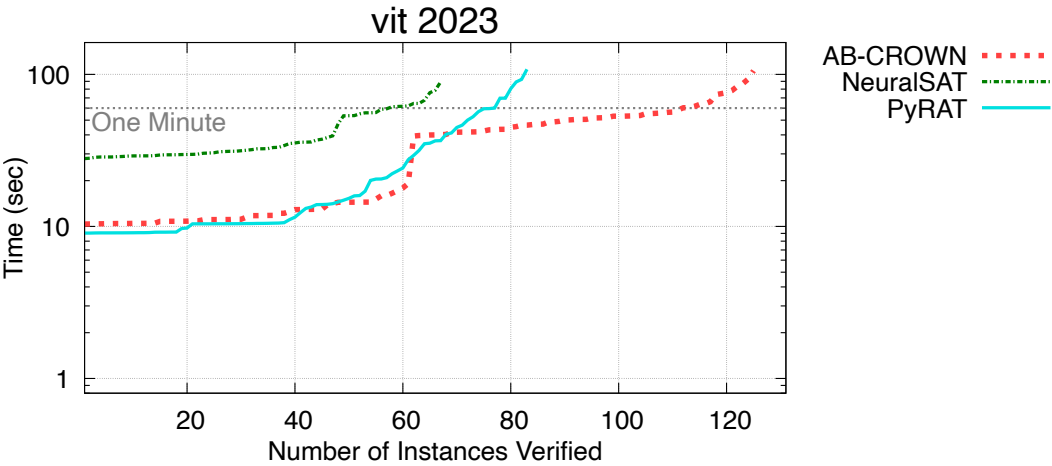
Figure 26: Cactus Plot for vit 2023.

Table 26: Benchmark `2025-yolo-2023`

#	Tool	Verified	Falsified	Fastest	Penalty	Points	Score	Solved
1	NNV	71	0	0	0	710	100.0	98.6%
2	α-β-CROWN	61	0	0	0	610	85.9	84.7%
3	NeuralSAT	52	0	0	0	520	73.2	72.2%
4	PyRAT	40	0	0	0	400	56.3	55.6%
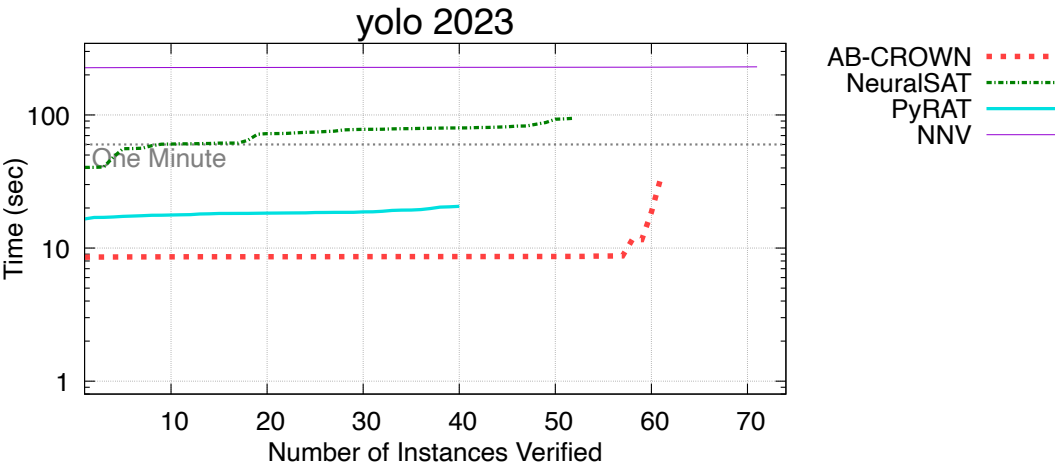
Figure 27: Cactus Plot for yolo 2023.

4 Stats

Table 27: Overhead

#	Tool	Seconds
1	nnenum	0.9
2	SobolBox	2.7
3	NeuralSAT	5.9
4	α-β-CROWN	6.0
5	PyRAT	6.0
6	CORA	10.9
7	NNV	14.2
8	Scoring-small-tol	inf
9	Scoring-zero-tol	inf

Table 28: Num Benchmarks Participated

#	Tool	Count
1	NeuralSAT	16
2	α-β-CROWN	16
3	PyRAT	15
4	NNV	15
5	CORA	14
6	nnenum	11
7	SobolBox	9
8	Scoring-zero-tol	0
9	Scoring-small-tol	0

Table 29: Num Instances Verified

#	Tool	Count
1	α-β-CROWN	2575
2	NeuralSAT	2425
3	PyRAT	2090
4	CORA	1854
5	nnenum	1596
6	NNV	1082
7	SobolBox	1057

Table 30: Num SAT

#	Tool	Count
1	α-β-CROWN	1082
2	NeuralSAT	1055
3	PyRAT	1018
4	CORA	946
5	nnenum	786
6	NNV	354
7	SobolBox	317

Table 31: Num UNSAT

#	Tool	Count
1	α-β-CROWN	1493
2	NeuralSAT	1370
3	PyRAT	1072
4	CORA	908
5	nnenum	810
6	SobolBox	740
7	NNV	728

Table 32: Incorrect Results (or Missing CE)

#	Tool	Count
1	SobolBox	437
2	CORA	20
3	NNV	19
4	NeuralSAT	17
5	PyRAT	2

5 Detailed Results

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Acasxu 2023	0	UNSAT	8.45	18.1	13.2	15.9	1.42	-	3.04
2025 Acasxu 2023	1	UNSAT	7.76	18.1	16.1	14.0	1.45	-	2.84
2025 Acasxu 2023	2	UNSAT	7.90	18.3	18.9	14.0	1.52	-	2.84
2025 Acasxu 2023	3	UNSAT	7.92	18.3	16.0	12.7	1.41	-	2.83
2025 Acasxu 2023	4	UNSAT	7.77	18.2	12.7	13.8	1.45	-	2.88
2025 Acasxu 2023	5	UNSAT	7.83	18.1	16.6	13.5	1.65	-	2.82
2025 Acasxu 2023	6	UNSAT	7.75	18.0	13.1	13.5	1.32	-	2.87
2025 Acasxu 2023	7	UNSAT	7.76	18.0	10.6	12.3	1.48	-	2.85
2025 Acasxu 2023	8	UNSAT	7.61	18.0	9.78	13.2	1.40	-	2.85
2025 Acasxu 2023	9	UNSAT	7.83	18.2	20.2	13.8	1.60	-	2.84
2025 Acasxu 2023	10	UNSAT	7.97	18.3	26.5	13.9	1.94	-	2.84
2025 Acasxu 2023	11	UNSAT	7.88	18.3	18.8	13.7	1.74	-	2.87
2025 Acasxu 2023	12	UNSAT	7.80	18.3	15.5	14.0	1.41	-	2.90
2025 Acasxu 2023	13	UNSAT	8.08	18.3	30.0	14.7	1.98	-	2.89
2025 Acasxu 2023	14	UNSAT	8.11	18.3	28.6	15.2	1.92	-	2.89
2025 Acasxu 2023	15	UNSAT	8.35	19.5	56.6	16.4	2.34	-	2.87
2025 Acasxu 2023	16	UNSAT	8.27	63.0	56.3	17.8	2.18	-	2.88
2025 Acasxu 2023	17	UNSAT	8.35	19.5	58.4	17.5	62.3	-	2.88
2025 Acasxu 2023	18	UNSAT	7.92	18.3	20.0	15.0	1.70	-	3.14
2025 Acasxu 2023	19	UNSAT	8.14	18.4	19.1	13.5	1.54	-	2.89
2025 Acasxu 2023	20	UNSAT	7.91	18.3	20.3	14.5	1.56	-	2.86
2025 Acasxu 2023	21	UNSAT	7.95	18.3	14.9	14.2	1.44	-	2.85
2025 Acasxu 2023	22	UNSAT	8.03	18.4	23.7	15.2	1.72	-	2.91
2025 Acasxu 2023	23	UNSAT	8.15	18.6	41.0	16.5	2.34	-	2.88
2025 Acasxu 2023	24	UNSAT	8.14	18.4	44.6	17.0	2.19	-	3.13
2025 Acasxu 2023	25	UNSAT	8.31	18.6	41.7	17.0	2.11	-	2.88
2025 Acasxu 2023	26	UNSAT	8.52	19.7	39.8	16.3	1.89	-	2.87
2025 Acasxu 2023	27	UNSAT	7.96	19.3	24.4	14.4	1.83	-	2.85
2025 Acasxu 2023	28	UNSAT	7.85	18.4	23.9	14.5	1.72	-	2.86
2025 Acasxu 2023	29	UNSAT	7.89	18.3	18.4	14.5	1.73	-	2.87
2025 Acasxu 2023	30	UNSAT	7.96	18.3	16.0	14.0	1.48	-	2.88
2025 Acasxu 2023	31	UNSAT	8.01	18.3	29.5	15.0	1.77	-	2.88
2025 Acasxu 2023	32	UNSAT	8.29	18.7	54.6	17.4	2.87	-	2.84
2025 Acasxu 2023	33	UNSAT	8.36	19.5	71.1	17.2	2.31	-	2.87
2025 Acasxu 2023	34	UNSAT	8.24	19.5	42.6	17.0	2.08	-	2.86
2025 Acasxu 2023	35	UNSAT	8.66	20.4	76.1	19.9	3.26	-	2.85
2025 Acasxu 2023	36	UNSAT	7.83	18.3	20.8	13.8	1.49	-	2.85
2025 Acasxu 2023	37	UNSAT	7.92	18.3	18.7	13.5	1.66	-	2.89
2025 Acasxu 2023	38	UNSAT	7.89	18.2	17.8	13.8	1.41	-	2.84
2025 Acasxu 2023	39	UNSAT	7.76	18.2	14.7	13.0	1.56	-	2.85
2025 Acasxu 2023	40	UNSAT	7.97	18.3	25.8	14.7	1.62	-	2.87
2025 Acasxu 2023	41	UNSAT	8.11	19.3	38.5	14.5	2.08	-	2.86
2025 Acasxu 2023	42	UNSAT	8.11	18.4	34.4	16.2	1.88	-	2.90
2025 Acasxu 2023	43	UNSAT	8.30	21.5	57.1	17.3	61.5	-	2.86
2025 Acasxu 2023	44	UNSAT	8.20	19.5	50.8	16.3	2.42	-	2.85
2025 Acasxu 2023	45	UNSAT	8.45	19.9	14.5	19.7	1.50	-	-
2025 Acasxu 2023	46	SAT	6.34	7.91	28.4	15.9	1.19	-	12.1
2025 Acasxu 2023	47	SAT	6.40	96.1	52.3	18.7	1.61	-	✗
2025 Acasxu 2023	48	SAT	6.40	6.12	12.6	13.2	1.24	-	3.58
2025 Acasxu 2023	49	SAT	6.57	114	-	17.7	1.17	-	-
2025 Acasxu 2023	50	SAT	6.37	65.6	45.1	17.0	1.45	-	12.1
2025 Acasxu 2023	51	UNSAT	8.20	19.6	16.8	18.0	1.68	-	-
2025 Acasxu 2023	52	UNSAT	8.21	19.6	17.6	16.5	2.21	-	-
2025 Acasxu 2023	53	UNSAT	8.21	19.7	19.7	16.4	1.81	-	-
2025 Acasxu 2023	54	SAT	6.39	5.99	8.00	12.7	1.12	17.0	2.69
2025 Acasxu 2023	55	SAT	6.44	6.03	6.14	12.6	1.10	16.6	2.67
2025 Acasxu 2023	56	SAT	6.41	5.95	6.15	13.0	1.11	16.7	2.69
2025 Acasxu 2023	57	SAT	6.37	5.95	6.14	12.7	1.17	16.7	2.72
2025 Acasxu 2023	58	SAT	6.53	5.99	6.12	12.7	1.10	16.6	2.70
2025 Acasxu 2023	59	SAT	6.38	5.92	6.16	11.6	1.11	16.7	2.68
2025 Acasxu 2023	60	SAT	6.39	5.98	6.15	13.7	1.11	16.6	2.71
2025 Acasxu 2023	61	SAT	6.39	5.96	8.13	14.3	1.10	16.7	2.69
2025 Acasxu 2023	62	SAT	6.38	5.98	21.5	14.7	1.19	16.6	2.72

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Acasxu 2023	63	SAT	6.40	5.95	7.00	11.9	1.10	16.6	2.72
2025 Acasxu 2023	64	SAT	6.41	6.02	31.6	12.9	1.14	-	13.4
2025 Acasxu 2023	65	UNSAT	18.2	91.6	110	-	5.38	-	-
2025 Acasxu 2023	66	SAT	6.36	6.00	15.1	13.0	1.10	16.9	2.69
2025 Acasxu 2023	67	SAT	6.39	5.97	9.44	12.7	1.10	16.7	2.70
2025 Acasxu 2023	68	SAT	6.38	5.93	25.2	13.5	1.11	16.7	3.07
2025 Acasxu 2023	69	SAT	6.36	6.50	32.2	12.7	1.46	16.9	2.69
2025 Acasxu 2023	70	SAT	6.36	5.97	7.24	12.7	1.10	16.7	2.68
2025 Acasxu 2023	71	SAT	6.38	5.97	6.15	12.7	1.12	16.8	2.70
2025 Acasxu 2023	72	SAT	6.37	6.07	6.15	12.7	1.11	16.7	2.70
2025 Acasxu 2023	73	UNSAT	9.80	21.1	56.6	34.3	5.78	-	-
2025 Acasxu 2023	74	SAT	6.35	5.95	6.13	11.7	1.11	16.9	2.69
2025 Acasxu 2023	75	SAT	6.44	6.00	12.1	11.7	1.12	16.4	2.69
2025 Acasxu 2023	76	SAT	6.35	6.07	7.21	12.7	1.11	16.6	2.70
2025 Acasxu 2023	77	SAT	6.39	5.92	6.11	12.6	1.10	16.5	2.68
2025 Acasxu 2023	78	SAT	6.41	5.94	6.13	13.8	1.10	16.7	2.68
2025 Acasxu 2023	79	SAT	6.41	5.93	6.17	14.2	1.12	16.7	2.72
2025 Acasxu 2023	80	SAT	6.37	6.11	15.2	14.7	1.22	16.8	2.71
2025 Acasxu 2023	81	SAT	6.38	5.90	6.11	12.7	1.11	16.7	2.70
2025 Acasxu 2023	82	SAT	6.35	5.97	12.2	12.7	1.10	16.6	2.72
2025 Acasxu 2023	83	SAT	6.59	98.0	55.7	20.1	1.66	-	-
2025 Acasxu 2023	84	SAT	6.34	5.91	9.04	12.9	1.10	16.9	2.73
2025 Acasxu 2023	85	SAT	6.38	5.91	7.09	13.5	1.10	16.6	2.69
2025 Acasxu 2023	86	SAT	6.37	5.95	6.11	11.7	1.13	16.7	2.71
2025 Acasxu 2023	87	SAT	6.39	5.93	6.16	14.1	1.11	16.6	2.70
2025 Acasxu 2023	88	SAT	6.39	5.93	8.25	12.9	1.10	16.6	2.70
2025 Acasxu 2023	89	SAT	6.38	5.93	9.99	14.4	1.11	16.5	2.69
2025 Acasxu 2023	90	UNSAT	8.12	19.6	41.6	18.2	1.46	-	-
2025 Acasxu 2023	91	UNSAT	7.58	18.7	8.36	14.4	1.48	-	-
2025 Acasxu 2023	92	UNSAT	7.66	19.4	8.43	-	1.31	-	-
2025 Acasxu 2023	93	UNSAT	7.64	18.5	6.29	13.3	1.14	18.0	2.86
2025 Acasxu 2023	94	UNSAT	7.38	18.4	6.32	13.5	1.17	17.7	2.87
2025 Acasxu 2023	95	UNSAT	6.31	18.4	6.29	12.4	1.10	17.6	2.85
2025 Acasxu 2023	96	SAT	6.32	5.93	6.11	12.4	1.11	16.1	2.86
2025 Acasxu 2023	97	SAT	6.30	5.96	6.09	12.2	1.09	15.9	2.87
2025 Acasxu 2023	98	SAT	6.39	5.91	6.09	11.2	1.08	15.9	2.85
2025 Acasxu 2023	99	UNSAT	7.73	18.6	7.23	13.5	1.41	-	-
2025 Acasxu 2023	100	UNSAT	7.68	18.7	7.17	14.4	1.27	118	-
2025 Acasxu 2023	101	UNSAT	7.66	18.7	7.82	12.7	1.32	-	2.85
2025 Acasxu 2023	102	UNSAT	6.35	18.4	6.27	12.4	0.91	17.7	2.88
2025 Acasxu 2023	103	UNSAT	7.47	18.4	6.32	11.9	1.11	18.0	2.84
2025 Acasxu 2023	104	UNSAT	6.31	18.3	6.33	12.4	1.10	17.6	2.88
2025 Acasxu 2023	105	UNSAT	6.32	18.5	6.33	11.9	1.09	17.8	2.88
2025 Acasxu 2023	106	UNSAT	6.29	18.4	6.27	12.9	1.11	17.5	2.89
2025 Acasxu 2023	107	UNSAT	6.30	18.3	6.26	12.2	0.89	17.3	2.83
2025 Acasxu 2023	108	UNSAT	7.48	18.7	6.29	13.5	1.10	17.8	2.86
2025 Acasxu 2023	109	UNSAT	7.56	18.5	7.60	13.3	1.42	-	-
2025 Acasxu 2023	110	UNSAT	7.54	18.5	6.34	13.7	1.26	18.3	2.85
2025 Acasxu 2023	111	UNSAT	7.59	18.4	6.70	12.5	1.13	81.0	2.85
2025 Acasxu 2023	112	UNSAT	7.49	18.4	6.31	12.0	1.11	18.2	2.86
2025 Acasxu 2023	113	UNSAT	7.51	18.7	6.69	13.2	1.11	78.8	2.85
2025 Acasxu 2023	114	UNSAT	6.34	18.4	6.32	12.4	1.16	17.8	2.87
2025 Acasxu 2023	115	UNSAT	7.45	18.6	6.63	13.0	1.10	17.6	2.88
2025 Acasxu 2023	116	UNSAT	7.46	18.5	6.34	12.9	1.12	17.7	2.86
2025 Acasxu 2023	117	UNSAT	7.56	18.6	7.10	13.5	1.13	80.4	2.89
2025 Acasxu 2023	118	UNSAT	7.61	18.7	7.78	14.5	1.32	-	-
2025 Acasxu 2023	119	UNSAT	7.79	18.5	7.57	14.5	1.40	-	2.95
2025 Acasxu 2023	120	UNSAT	7.45	18.4	6.33	12.9	1.12	18.0	2.86
2025 Acasxu 2023	121	UNSAT	6.43	18.3	6.28	12.9	1.09	17.5	2.86
2025 Acasxu 2023	122	UNSAT	7.41	18.5	6.70	13.5	1.12	18.4	2.86
2025 Acasxu 2023	123	UNSAT	7.45	18.5	6.30	11.9	1.11	17.7	2.89
2025 Acasxu 2023	124	UNSAT	6.30	18.5	6.25	12.9	1.13	17.7	2.86
2025 Acasxu 2023	125	UNSAT	7.58	18.4	6.30	11.9	1.12	17.8	2.92
2025 Acasxu 2023	126	UNSAT	7.61	18.8	8.92	14.3	1.31	-	-
2025 Acasxu 2023	127	UNSAT	7.62	18.5	6.67	13.5	1.14	17.9	2.90
2025 Acasxu 2023	128	UNSAT	7.40	18.5	6.66	13.2	1.17	18.1	2.86
2025 Acasxu 2023	129	UNSAT	7.44	18.3	6.31	12.7	1.10	17.7	2.90
2025 Acasxu 2023	130	UNSAT	7.43	18.6	6.32	12.9	1.10	17.7	2.87

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Acasxu 2023	131	UNSAT	7.37	18.4	6.34	13.0	1.10	17.8	2.85
2025 Acasxu 2023	132	UNSAT	6.32	18.3	6.29	11.2	0.90	17.5	2.85
2025 Acasxu 2023	133	UNSAT	7.45	18.5	6.70	13.4	1.10	17.8	2.84
2025 Acasxu 2023	134	UNSAT	7.43	18.5	6.30	13.2	0.90	17.6	2.89
2025 Acasxu 2023	135	UNSAT	7.63	18.7	11.5	15.7	1.37	-	-
2025 Acasxu 2023	136	UNSAT	7.60	19.2	8.37	14.8	1.35	-	-
2025 Acasxu 2023	137	UNSAT	7.60	18.5	8.91	14.5	1.27	-	-
2025 Acasxu 2023	138	UNSAT	7.56	18.5	7.16	13.4	1.13	62.7	2.86
2025 Acasxu 2023	139	UNSAT	7.49	18.5	6.61	13.2	1.24	-	2.90
2025 Acasxu 2023	140	UNSAT	7.45	18.4	6.93	12.2	1.19	18.2	2.90
2025 Acasxu 2023	141	SAT	6.31	5.92	6.10	11.1	1.09	15.9	2.86
2025 Acasxu 2023	142	SAT	6.34	5.93	6.11	12.5	1.16	16.1	2.85
2025 Acasxu 2023	143	SAT	6.28	5.92	6.09	12.2	1.10	16.0	2.91
2025 Acasxu 2023	144	UNSAT	7.46	18.5	7.19	12.5	1.17	95.2	-
2025 Acasxu 2023	145	UNSAT	7.51	18.7	7.21	13.2	1.19	96.7	2.86
2025 Acasxu 2023	146	UNSAT	7.39	18.5	6.72	12.0	1.11	17.9	2.85
2025 Acasxu 2023	147	UNSAT	7.42	18.5	6.27	12.9	1.09	17.9	2.88
2025 Acasxu 2023	148	UNSAT	7.49	18.4	6.31	12.5	1.15	18.0	2.92
2025 Acasxu 2023	149	UNSAT	7.42	18.5	6.27	13.0	1.12	18.0	2.90
2025 Acasxu 2023	150	UNSAT	7.42	18.3	6.30	12.9	1.10	17.7	2.92
2025 Acasxu 2023	151	UNSAT	7.60	18.5	6.77	13.2	1.15	79.7	2.91
2025 Acasxu 2023	152	UNSAT	6.36	18.3	6.28	12.5	0.90	17.8	2.84
2025 Acasxu 2023	153	UNSAT	7.46	18.7	6.67	12.9	1.12	17.9	2.86
2025 Acasxu 2023	154	UNSAT	7.50	18.4	6.67	13.2	1.19	17.7	2.86
2025 Acasxu 2023	155	UNSAT	6.35	18.3	6.35	13.7	1.11	17.7	2.86
2025 Acasxu 2023	156	UNSAT	7.44	18.2	6.32	12.9	1.11	17.7	2.87
2025 Acasxu 2023	157	UNSAT	7.44	18.5	6.72	13.2	1.14	18.1	2.86
2025 Acasxu 2023	158	UNSAT	7.56	18.5	6.40	11.9	1.11	18.1	2.85
2025 Acasxu 2023	159	UNSAT	7.45	18.5	6.29	12.7	1.13	17.7	2.84
2025 Acasxu 2023	160	UNSAT	7.54	18.5	6.93	13.2	1.13	62.1	2.86
2025 Acasxu 2023	161	UNSAT	7.48	18.4	6.68	12.9	1.22	18.2	2.84
2025 Acasxu 2023	162	UNSAT	6.30	18.6	6.25	11.8	1.10	17.7	-
2025 Acasxu 2023	163	UNSAT	7.55	18.4	6.67	13.2	1.13	18.0	2.87
2025 Acasxu 2023	164	UNSAT	7.48	18.4	6.96	12.2	1.15	18.0	2.88
2025 Acasxu 2023	165	UNSAT	7.46	18.5	6.73	12.9	1.14	70.3	2.87
2025 Acasxu 2023	166	UNSAT	7.42	18.5	6.32	12.7	1.09	18.4	2.88
2025 Acasxu 2023	167	UNSAT	7.51	18.2	6.30	12.7	1.10	18.2	2.85
2025 Acasxu 2023	168	UNSAT	7.38	18.6	6.28	13.0	1.12	17.8	2.86
2025 Acasxu 2023	169	UNSAT	7.47	18.4	6.30	13.7	1.10	18.2	2.87
2025 Acasxu 2023	170	UNSAT	7.50	18.5	6.34	12.9	1.11	18.1	2.87
2025 Acasxu 2023	171	UNSAT	7.43	18.5	6.31	11.9	1.11	18.0	2.86
2025 Acasxu 2023	172	UNSAT	7.47	18.5	6.28	12.7	1.11	17.8	2.87
2025 Acasxu 2023	173	UNSAT	7.44	18.4	6.29	12.6	1.11	17.9	2.86
2025 Acasxu 2023	174	UNSAT	7.39	18.4	6.29	13.0	1.10	17.9	2.87
2025 Acasxu 2023	175	UNSAT	7.54	18.5	6.29	12.0	1.11	17.9	2.89
2025 Acasxu 2023	176	UNSAT	6.29	18.5	6.30	12.7	1.11	17.8	2.86
2025 Acasxu 2023	177	UNSAT	6.34	18.4	6.29	12.6	1.10	17.7	2.89
2025 Acasxu 2023	178	UNSAT	7.46	18.4	6.70	13.0	1.11	18.1	2.86
2025 Acasxu 2023	179	UNSAT	7.38	18.5	6.31	12.7	1.17	17.7	2.89
2025 Acasxu 2023	180	UNSAT	8.47	20.0	14.7	20.3	1.87	-	-
2025 Acasxu 2023	181	UNSAT	9.43	19.7	64.4	23.3	4.74	-	3.19
2025 Acasxu 2023	182	SAT	6.37	94.6	31.6	13.7	32.7	-	-
2025 Acasxu 2023	183	SAT	6.35	87.6	16.6	-	1.17	17.0	2.88
2025 Acasxu 2023	184	UNSAT	8.26	19.5	21.5	15.7	2.94	-	-
2025 Acasxu 2023	185	UNSAT	8.09	19.1	11.4	15.5	1.46	-	3.00
2025 Cersyve	0	SAT	6.31	12.9	6.07	14.7	-	-	3.19
2025 Cersyve	1	SAT	6.24	5.99	6.09	12.9	-	15.6	3.11
2025 Cersyve	2	UNSAT	7.60	17.4	-	14.2	-	-	-
2025 Cersyve	3	UNSAT	8.17	-	-	43.6	-	-	-
2025 Cersyve	4	SAT	6.27	17.7	6.05	✗	-	-	3.90
2025 Cersyve	5	SAT	6.29	6.02	6.06	14.3	-	16.0	3.49
2025 Cersyve	6	UNSAT	7.19	16.8	10.2	12.0	-	-	-
2025 Cersyve	7	UNSAT	8.24	18.0	-	16.0	-	-	-
2025 Cersyve	8	SAT	6.24	6.52	6.04	13.3	-	-	4.01
2025 Cersyve	9	SAT	6.23	5.99	6.07	14.0	-	15.8	3.16
2025 Cersyve	10	UNSAT	7.31	16.9	36.9	14.3	-	-	-
2025 Cersyve	11	UNSAT	8.41	-	-	47.9	-	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Cgan 2023	0	SAT	7.07	7.34	9.72	-	10.5	18.9	5.98
2025 Cgan 2023	1	UNSAT	7.99	28.3	9.61	-	14.3	26.3	6.05
2025 Cgan 2023	2	SAT	6.40	6.20	8.67	-	18.6	18.1	6.59
2025 Cgan 2023	3	UNSAT	7.94	28.0	9.67	-	12.1	23.5	6.26
2025 Cgan 2023	4	UNSAT	8.68	29.5	10.8	-	22.5	-	6.50
2025 Cgan 2023	5	UNSAT	8.66	27.8	9.62	-	10.6	22.3	6.46
2025 Cgan 2023	6	UNSAT	9.45	32.9	9.63	-	24.0	250	6.48
2025 Cgan 2023	7	SAT	6.38	6.16	8.68	-	19.3	18.0	6.47
2025 Cgan 2023	8	SAT	6.49	6.34	8.70	-	51.8	18.7	7.85
2025 Cgan 2023	9	SAT	6.40	6.23	8.65	-	1.76	18.7	8.62
2025 Cgan 2023	10	SAT	6.39	6.27	8.60	-	1.79	18.5	7.85
2025 Cgan 2023	11	SAT	6.39	6.30	8.69	-	66.8	18.6	7.90
2025 Cgan 2023	12	SAT	6.43	6.25	8.62	-	31.1	18.6	8.93
2025 Cgan 2023	13	UNSAT	14.9	141	10.1	-	81.0	-	8.52
2025 Cgan 2023	14	SAT	6.56	6.66	8.69	-	17.6	-	8.62
2025 Cgan 2023	15	UNSAT	11.7	138	9.94	-	221	45.1	8.71
2025 Cgan 2023	16	UNSAT	8.91	28.4	11.7	-	-	-	6.49
2025 Cgan 2023	17	SAT	6.48	6.17	8.64	-	17.7	18.2	7.25
2025 Cgan 2023	18	UNSAT	11.5	33.1	12.0	-	-	-	5.68
2025 Cgan 2023	19	SAT	8.40	15.6	15.3	-	-	78.2	-
2025 Cgan 2023	20	SAT	8.40	14.7	14.5	-	-	77.5	-
2025 Cifar100 2024	0	UNSAT	-	-	-	-	-	75.3	-
2025 Cifar100 2024	1	UNSAT	16.1	46.0	-	-	-	75.1	-
2025 Cifar100 2024	2	SAT	7.48	8.75	8.91	-	-	✗	-
2025 Cifar100 2024	3	UNSAT	12.6	31.4	17.5	-	-	76.3	-
2025 Cifar100 2024	4	UNSAT	18.5	53.8	-	-	-	75.5	-
2025 Cifar100 2024	5	UNSAT	-	-	-	-	-	75.1	-
2025 Cifar100 2024	6	UNSAT	14.7	43.7	-	-	-	75.8	-
2025 Cifar100 2024	7	UNSAT	13.7	34.5	30.2	-	-	75.5	-
2025 Cifar100 2024	8	UNSAT	-	-	-	-	-	75.3	-
2025 Cifar100 2024	9	UNSAT	12.7	31.6	14.8	-	-	75.1	-
2025 Cifar100 2024	10	UNSAT	10.3	22.6	11.2	-	-	75.5	-
2025 Cifar100 2024	11	SAT	7.47	11.0	-	-	-	✗	-
2025 Cifar100 2024	12	UNSAT	-	-	-	-	-	75.4	-
2025 Cifar100 2024	13	UNSAT	37.3	76.8	-	-	-	75.3	-
2025 Cifar100 2024	14	UNSAT	22.4	63.3	-	-	-	76.1	-
2025 Cifar100 2024	15	UNSAT	13.2	29.7	16.6	-	-	75.6	-
2025 Cifar100 2024	16	UNSAT	14.7	47.0	81.6	-	-	75.6	-
2025 Cifar100 2024	17	UNSAT	12.9	29.9	14.7	-	-	75.6	-
2025 Cifar100 2024	18	UNSAT	-	-	-	-	-	76.0	-
2025 Cifar100 2024	19	UNSAT	18.0	49.2	-	-	-	75.5	-
2025 Cifar100 2024	20	UNSAT	13.2	33.9	45.7	-	-	75.1	-
2025 Cifar100 2024	21	UNSAT	-	-	-	-	-	75.3	-
2025 Cifar100 2024	22	UNSAT	-	-	-	-	-	76.0	-
2025 Cifar100 2024	23	UNSAT	-	-	-	-	-	75.9	-
2025 Cifar100 2024	24	UNSAT	-	-	-	-	-	75.3	-
2025 Cifar100 2024	25	UNSAT	-	-	-	-	-	75.3	-
2025 Cifar100 2024	26	SAT	7.49	8.68	8.88	13.5	-	-	-
2025 Cifar100 2024	27	UNSAT	12.7	27.9	14.6	-	-	75.5	-
2025 Cifar100 2024	28	UNSAT	9.99	21.6	11.3	-	-	75.2	-
2025 Cifar100 2024	29	UNSAT	9.94	21.4	10.9	-	-	75.8	-
2025 Cifar100 2024	30	UNSAT	21.9	51.4	-	-	-	75.2	-
2025 Cifar100 2024	31	SAT	7.55	8.88	9.03	-	-	✗	-
2025 Cifar100 2024	32	UNSAT	-	-	-	-	-	75.7	-
2025 Cifar100 2024	33	UNSAT	13.8	47.1	46.1	-	-	75.7	-
2025 Cifar100 2024	34	UNSAT	-	-	-	-	-	75.2	-
2025 Cifar100 2024	35	UNSAT	-	-	-	-	-	75.6	-
2025 Cifar100 2024	36	UNSAT	33.0	70.4	-	-	-	76.5	-
2025 Cifar100 2024	37	UNSAT	18.5	53.7	-	-	-	75.6	-
2025 Cifar100 2024	38	UNSAT	12.6	28.8	12.6	-	-	75.9	-
2025 Cifar100 2024	39	SAT	7.53	8.83	8.81	14.5	-	-	-
2025 Cifar100 2024	40	UNSAT	-	-	-	-	-	75.3	-
2025 Cifar100 2024	41	UNSAT	14.6	43.2	84.3	-	-	76.0	-
2025 Cifar100 2024	42	UNSAT	-	-	-	-	-	77.2	-
2025 Cifar100 2024	43	SAT	7.49	8.69	8.87	14.5	-	-	-
2025 Cifar100 2024	44	UNSAT	-	-	-	-	-	75.6	-
2025 Cifar100 2024	45	UNSAT	-	-	-	-	-	75.9	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Cifar100 2024	46	UNSAT	13.6	37.1	37.2	-	-	75.9	-
2025 Cifar100 2024	47	UNSAT	15.6	43.4	-	-	-	75.7	-
2025 Cifar100 2024	48	SAT	7.52	8.55	8.83	14.5	-	-	-
2025 Cifar100 2024	49	UNSAT	-	-	-	-	-	75.0	-
2025 Cifar100 2024	50	UNSAT	12.7	27.1	12.6	-	-	75.6	-
2025 Cifar100 2024	51	UNSAT	23.4	52.6	-	-	-	75.8	-
2025 Cifar100 2024	52	UNSAT	14.7	35.3	102	-	-	75.7	-
2025 Cifar100 2024	53	UNSAT	12.8	30.5	14.5	-	-	75.1	-
2025 Cifar100 2024	54	SAT	7.54	✗	9.13	-	-	✗	-
2025 Cifar100 2024	55	UNSAT	40.7	84.9	-	-	-	76.1	-
2025 Cifar100 2024	56	UNSAT	27.7	59.4	-	-	-	76.4	-
2025 Cifar100 2024	57	UNSAT	-	-	-	-	-	76.5	-
2025 Cifar100 2024	58	UNSAT	-	-	-	-	-	75.4	-
2025 Cifar100 2024	59	UNSAT	-	-	-	-	-	75.9	-
2025 Cifar100 2024	60	UNSAT	31.2	66.6	-	-	-	75.6	-
2025 Cifar100 2024	61	SAT	7.43	8.61	8.83	14.3	-	-	-
2025 Cifar100 2024	62	UNSAT	20.6	69.0	-	-	-	75.5	-
2025 Cifar100 2024	63	UNSAT	-	-	-	-	-	74.7	-
2025 Cifar100 2024	64	SAT	7.44	8.68	8.96	-	-	✗	-
2025 Cifar100 2024	65	SAT	7.45	8.62	8.81	14.5	-	-	-
2025 Cifar100 2024	66	UNSAT	89.7	-	-	-	-	75.7	-
2025 Cifar100 2024	67	UNSAT	-	-	-	-	-	75.2	-
2025 Cifar100 2024	68	UNSAT	66.4	-	-	-	-	75.8	-
2025 Cifar100 2024	69	SAT	7.50	8.74	9.02	-	-	✗	-
2025 Cifar100 2024	70	UNSAT	13.7	45.2	62.6	-	-	75.8	-
2025 Cifar100 2024	71	UNSAT	15.7	40.6	-	-	-	76.3	-
2025 Cifar100 2024	72	UNSAT	12.6	28.2	16.9	-	-	75.1	-
2025 Cifar100 2024	73	UNSAT	-	-	-	-	-	76.0	-
2025 Cifar100 2024	74	UNSAT	-	-	-	-	-	76.2	-
2025 Cifar100 2024	75	UNSAT	12.6	30.7	18.2	-	-	75.4	-
2025 Cifar100 2024	76	UNSAT	10.3	22.5	10.9	-	-	75.7	-
2025 Cifar100 2024	77	UNSAT	-	-	-	-	-	76.0	-
2025 Cifar100 2024	78	UNSAT	-	-	-	-	-	75.8	-
2025 Cifar100 2024	79	UNSAT	-	-	-	-	-	75.8	-
2025 Cifar100 2024	80	UNSAT	13.1	36.5	28.0	-	-	75.9	-
2025 Cifar100 2024	81	UNSAT	-	-	-	-	-	76.5	-
2025 Cifar100 2024	82	UNSAT	14.0	31.6	29.5	-	-	75.5	-
2025 Cifar100 2024	83	SAT	7.51	11.6	8.99	-	-	✗	-
2025 Cifar100 2024	84	UNSAT	12.7	29.3	12.9	-	-	76.2	-
2025 Cifar100 2024	85	UNSAT	58.0	-	-	-	-	75.6	-
2025 Cifar100 2024	86	UNSAT	-	-	-	-	-	76.0	-
2025 Cifar100 2024	87	UNSAT	26.6	77.7	-	-	-	75.6	-
2025 Cifar100 2024	88	UNSAT	15.2	53.7	-	-	-	75.5	-
2025 Cifar100 2024	89	UNSAT	26.8	62.9	-	-	-	75.7	-
2025 Cifar100 2024	90	UNSAT	-	-	-	-	-	75.5	-
2025 Cifar100 2024	91	UNSAT	-	-	-	-	-	75.7	-
2025 Cifar100 2024	92	UNSAT	14.1	38.4	73.9	-	-	76.1	-
2025 Cifar100 2024	93	UNSAT	12.5	31.5	12.6	-	-	75.3	-
2025 Cifar100 2024	94	UNSAT	17.1	43.6	-	-	-	75.4	-
2025 Cifar100 2024	95	UNSAT	-	-	-	-	-	75.9	-
2025 Cifar100 2024	96	UNSAT	-	-	-	-	-	75.5	-
2025 Cifar100 2024	97	SAT	7.48	8.66	8.87	14.6	-	-	-
2025 Cifar100 2024	98	UNSAT	18.4	45.1	-	-	-	75.9	-
2025 Cifar100 2024	99	UNSAT	35.6	68.2	-	-	-	75.6	-
2025 Cifar100 2024	100	UNSAT	10.4	26.7	17.3	-	-	78.4	-
2025 Cifar100 2024	101	UNSAT	15.3	70.8	28.3	-	-	77.1	-
2025 Cifar100 2024	102	UNSAT	14.7	51.0	21.1	-	-	77.4	-
2025 Cifar100 2024	103	UNSAT	16.2	80.8	24.1	-	-	77.7	-
2025 Cifar100 2024	104	UNSAT	-	-	-	-	-	78.0	-
2025 Cifar100 2024	105	UNSAT	16.4	53.3	-	-	-	77.6	-
2025 Cifar100 2024	106	UNSAT	-	-	-	-	-	77.7	-
2025 Cifar100 2024	107	UNSAT	-	-	-	-	-	77.4	-
2025 Cifar100 2024	108	UNSAT	-	-	-	-	-	78.0	-
2025 Cifar100 2024	109	UNSAT	-	-	-	-	-	77.9	-
2025 Cifar100 2024	110	SAT	7.76	✗	-	-	-	✗	-
2025 Cifar100 2024	111	UNSAT	-	-	-	-	-	77.6	-
2025 Cifar100 2024	112	UNSAT	18.6	60.3	-	-	-	77.4	-
2025 Cifar100 2024	113	UNSAT	9.85	21.5	14.6	-	-	78.0	-

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Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Cifar100 2024	114	SAT	7.77	9.36	9.16	-	-	✗	-
2025 Cifar100 2024	115	UNSAT	-	-	-	-	-	78.4	-
2025 Cifar100 2024	116	UNSAT	14.7	52.6	27.1	-	-	77.2	-
2025 Cifar100 2024	117	UNSAT	-	-	-	-	-	77.4	-
2025 Cifar100 2024	118	SAT	7.78	8.98	8.95	14.8	-	-	-
2025 Cifar100 2024	119	SAT	7.77	9.13	8.97	-	-	✗	-
2025 Cifar100 2024	120	UNSAT	10.7	30.8	20.3	-	-	77.9	-
2025 Cifar100 2024	121	UNSAT	-	-	-	-	-	78.0	-
2025 Cifar100 2024	122	UNSAT	-	-	-	-	-	77.5	-
2025 Cifar100 2024	123	UNSAT	29.7	97.8	-	-	-	77.7	-
2025 Cifar100 2024	124	SAT	7.83	8.89	8.96	-	-	✗	-
2025 Cifar100 2024	125	UNSAT	19.3	-	-	-	-	78.5	-
2025 Cifar100 2024	126	UNSAT	24.4	-	-	-	-	77.9	-
2025 Cifar100 2024	127	UNSAT	15.7	70.4	90.0	-	-	78.8	-
2025 Cifar100 2024	128	UNSAT	14.7	54.0	20.1	-	-	77.9	-
2025 Cifar100 2024	129	UNSAT	16.2	72.1	19.9	-	-	78.5	-
2025 Cifar100 2024	130	UNSAT	-	-	-	-	-	78.5	-
2025 Cifar100 2024	131	UNSAT	-	-	-	-	-	78.3	-
2025 Cifar100 2024	132	UNSAT	10.1	24.4	15.8	-	-	77.8	-
2025 Cifar100 2024	133	UNSAT	20.9	73.2	-	-	-	77.9	-
2025 Cifar100 2024	134	UNSAT	15.6	42.7	39.6	-	-	78.6	-
2025 Cifar100 2024	135	UNSAT	16.6	102	52.3	-	-	78.0	-
2025 Cifar100 2024	136	UNSAT	-	-	-	-	-	79.2	-
2025 Cifar100 2024	137	UNSAT	14.6	42.6	26.7	-	-	78.6	-
2025 Cifar100 2024	138	UNSAT	16.8	-	61.6	-	-	77.8	-
2025 Cifar100 2024	139	UNSAT	20.6	-	-	-	-	77.6	-
2025 Cifar100 2024	140	UNSAT	-	-	-	-	-	78.0	-
2025 Cifar100 2024	141	UNSAT	16.8	74.1	74.6	-	-	77.6	-
2025 Cifar100 2024	142	UNSAT	-	-	-	-	-	77.9	-
2025 Cifar100 2024	143	UNSAT	-	-	-	-	-	78.6	-
2025 Cifar100 2024	144	UNSAT	-	-	-	-	-	77.6	-
2025 Cifar100 2024	145	UNSAT	-	-	-	-	-	77.3	-
2025 Cifar100 2024	146	UNSAT	-	-	-	-	-	77.5	-
2025 Cifar100 2024	147	UNSAT	15.9	78.6	105	-	-	77.7	-
2025 Cifar100 2024	148	SAT	7.85	9.07	8.94	14.8	-	-	-
2025 Cifar100 2024	149	UNSAT	-	-	-	-	-	78.4	-
2025 Cifar100 2024	150	UNSAT	-	-	-	-	-	77.7	-
2025 Cifar100 2024	151	UNSAT	19.5	-	-	-	-	77.7	-
2025 Cifar100 2024	152	UNSAT	15.8	-	93.3	-	-	77.9	-
2025 Cifar100 2024	153	UNSAT	-	-	-	-	-	79.2	-
2025 Cifar100 2024	154	UNSAT	15.4	74.0	25.7	-	-	78.3	-
2025 Cifar100 2024	155	SAT	7.78	9.01	9.04	-	-	✗	-
2025 Cifar100 2024	156	UNSAT	10.7	30.0	16.4	-	-	78.3	-
2025 Cifar100 2024	157	UNSAT	17.2	87.8	-	-	-	79.6	-
2025 Cifar100 2024	158	UNSAT	-	-	-	-	-	78.3	-
2025 Cifar100 2024	159	UNSAT	-	-	-	-	-	77.8	-
2025 Cifar100 2024	160	SAT	7.88	✗	-	-	-	✗	-
2025 Cifar100 2024	161	SAT	7.74	✗	-	-	-	✗	-
2025 Cifar100 2024	162	UNSAT	15.4	81.0	22.0	-	-	77.9	-
2025 Cifar100 2024	163	UNSAT	14.7	53.4	27.7	-	-	78.4	-
2025 Cifar100 2024	164	SAT	7.78	8.88	8.96	-	-	✗	-
2025 Cifar100 2024	165	UNSAT	-	-	-	-	-	78.3	-
2025 Cifar100 2024	166	SAT	7.94	9.14	9.02	-	-	✗	-
2025 Cifar100 2024	167	UNSAT	10.1	26.4	16.4	-	-	77.6	-
2025 Cifar100 2024	168	UNSAT	15.7	51.5	23.8	-	-	77.8	-
2025 Cifar100 2024	169	UNSAT	-	-	-	-	-	77.7	-
2025 Cifar100 2024	170	UNSAT	17.5	-	-	-	-	77.6	-
2025 Cifar100 2024	171	UNSAT	-	-	-	-	-	78.6	-
2025 Cifar100 2024	172	UNSAT	-	-	-	-	-	78.8	-
2025 Cifar100 2024	173	UNSAT	17.9	-	48.6	-	-	78.6	-
2025 Cifar100 2024	174	UNSAT	15.6	63.5	22.9	-	-	78.2	-
2025 Cifar100 2024	175	UNSAT	18.2	92.4	-	-	-	78.5	-
2025 Cifar100 2024	176	UNSAT	15.3	78.1	44.1	-	-	78.0	-
2025 Cifar100 2024	177	UNSAT	18.5	75.8	-	-	-	79.2	-
2025 Cifar100 2024	178	UNSAT	-	-	-	-	-	78.7	-
2025 Cifar100 2024	179	UNSAT	9.71	24.8	18.8	-	-	79.3	-
2025 Cifar100 2024	180	UNSAT	-	-	-	-	-	78.3	-
2025 Cifar100 2024	181	SAT	7.73	9.16	9.01	-	-	✗	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Cifar100 2024	182	UNSAT	-	-	-	-	-	79.1	-
2025 Cifar100 2024	183	SAT	7.76	9.05	8.94	15.1	-	-	-
2025 Cifar100 2024	184	UNSAT	15.1	64.5	24.9	-	-	78.4	-
2025 Cifar100 2024	185	UNSAT	-	-	-	-	-	78.4	-
2025 Cifar100 2024	186	UNSAT	16.7	74.7	28.6	-	-	77.9	-
2025 Cifar100 2024	187	UNSAT	9.91	18.8	17.6	-	-	79.3	-
2025 Cifar100 2024	188	UNSAT	-	-	-	-	-	78.4	-
2025 Cifar100 2024	189	UNSAT	18.6	-	-	-	-	77.5	-
2025 Cifar100 2024	190	UNSAT	16.9	71.2	-	-	-	79.2	-
2025 Cifar100 2024	191	UNSAT	-	-	-	-	-	78.4	-
2025 Cifar100 2024	192	UNSAT	-	-	-	-	-	78.8	-
2025 Cifar100 2024	193	UNSAT	-	-	-	-	-	78.3	-
2025 Cifar100 2024	194	SAT	7.70	9.03	9.02	-	-	✗	-
2025 Cifar100 2024	195	UNSAT	-	-	-	-	-	77.7	-
2025 Cifar100 2024	196	UNSAT	16.0	-	57.7	-	-	77.9	-
2025 Cifar100 2024	197	UNSAT	16.9	81.2	88.9	-	-	78.5	-
2025 Cifar100 2024	198	UNSAT	16.0	66.4	22.0	-	-	78.4	-
2025 Cifar100 2024	199	SAT	7.75	8.87	9.07	-	-	✗	-
2025 Collins Rul Cnn 2022 0		UNSAT	6.37	6.32	6.14	16.3	1.46	15.0	-
2025 Collins Rul Cnn 2022 1		UNSAT	7.06	9.55	6.29	13.4	1.50	16.4	-
2025 Collins Rul Cnn 2022 2		UNSAT	7.10	12.5	6.38	13.5	1.43	16.7	-
2025 Collins Rul Cnn 2022 3		UNSAT	7.08	12.5	6.40	13.2	1.45	16.7	-
2025 Collins Rul Cnn 2022 4		SAT	6.34	6.35	6.12	13.8	1.50	15.0	-
2025 Collins Rul Cnn 2022 5		SAT	6.36	6.34	6.12	13.5	1.44	15.1	-
2025 Collins Rul Cnn 2022 6		SAT	6.43	6.31	6.19	13.8	1.49	15.1	76.7
2025 Collins Rul Cnn 2022 7		SAT	6.42	6.38	6.10	13.7	1.56	15.3	46.5
2025 Collins Rul Cnn 2022 8		UNSAT	7.08	18.5	6.22	13.4	1.46	16.7	47.4
2025 Collins Rul Cnn 2022 9		UNSAT	7.07	18.5	6.35	13.2	1.52	16.7	46.6
2025 Collins Rul Cnn 2022 10		UNSAT	7.12	26.7	6.39	13.3	1.41	16.9	46.4
2025 Collins Rul Cnn 2022 11		UNSAT	7.04	26.7	6.50	13.5	1.42	16.8	46.6
2025 Collins Rul Cnn 2022 12		UNSAT	7.03	26.7	6.26	13.4	1.54	16.7	46.8
2025 Collins Rul Cnn 2022 13		SAT	6.36	6.35	6.10	13.5	1.41	15.2	47.0
2025 Collins Rul Cnn 2022 14		UNSAT	7.04	26.7	6.44	13.5	1.58	16.8	46.9
2025 Collins Rul Cnn 2022 15		SAT	6.36	6.32	6.08	13.7	1.63	15.1	46.8
2025 Collins Rul Cnn 2022 16		UNSAT	7.12	9.57	6.34	13.2	1.58	16.8	-
2025 Collins Rul Cnn 2022 17		UNSAT	7.07	18.5	6.31	13.2	1.55	16.5	46.8
2025 Collins Rul Cnn 2022 18		UNSAT	7.11	26.7	6.35	13.4	1.43	16.8	46.6
2025 Collins Rul Cnn 2022 19		SAT	6.36	6.37	6.08	13.7	1.44	15.0	597
2025 Collins Rul Cnn 2022 20		SAT	6.43	6.35	6.10	13.7	1.51	15.1	485
2025 Collins Rul Cnn 2022 21		SAT	6.39	6.36	6.11	13.7	1.81	15.3	453
2025 Collins Rul Cnn 2022 22		UNSAT	6.37	6.40	6.12	13.7	1.57	15.0	-
2025 Collins Rul Cnn 2022 23		UNSAT	7.15	9.54	6.26	13.4	1.53	16.9	-
2025 Collins Rul Cnn 2022 24		UNSAT	7.07	12.5	6.37	13.4	1.49	17.2	49.5
2025 Collins Rul Cnn 2022 25		UNSAT	7.08	18.4	6.35	13.5	1.49	16.8	49.5
2025 Collins Rul Cnn 2022 26		SAT	6.37	6.41	6.07	13.7	1.45	15.0	49.9
2025 Collins Rul Cnn 2022 27		SAT	6.37	6.34	6.11	13.7	1.43	15.1	49.7
2025 Collins Rul Cnn 2022 28		SAT	6.39	6.33	6.10	13.8	1.50	15.3	49.7
2025 Collins Rul Cnn 2022 29		SAT	6.40	6.33	6.11	12.7	1.67	15.1	49.6
2025 Collins Rul Cnn 2022 30		UNSAT	7.10	18.5	6.35	13.5	1.62	16.8	49.8
2025 Collins Rul Cnn 2022 31		UNSAT	7.11	26.7	6.35	13.5	1.47	16.8	49.5
2025 Collins Rul Cnn 2022 32		UNSAT	7.10	26.7	6.38	13.2	1.49	16.7	49.7
2025 Collins Rul Cnn 2022 33		UNSAT	7.08	26.7	6.47	13.2	1.58	17.0	49.5
2025 Collins Rul Cnn 2022 34		UNSAT	7.12	26.7	6.34	13.5	1.45	16.8	50.0
2025 Collins Rul Cnn 2022 35		SAT	6.40	6.33	6.11	13.7	1.66	15.1	50.2
2025 Collins Rul Cnn 2022 36		UNSAT	7.13	26.7	6.57	13.5	1.48	17.6	50.1
2025 Collins Rul Cnn 2022 37		SAT	6.44	6.37	6.07	13.7	1.50	15.0	50.0
2025 Collins Rul Cnn 2022 38		UNSAT	7.07	12.5	6.28	13.2	1.51	16.5	50.0
2025 Collins Rul Cnn 2022 39		UNSAT	7.07	24.4	6.33	13.2	1.45	16.6	49.6
2025 Collins Rul Cnn 2022 40		UNSAT	7.06	26.7	6.41	13.5	1.59	17.1	49.7
2025 Collins Rul Cnn 2022 41		SAT	6.47	6.35	6.11	13.7	1.48	15.3	488
2025 Collins Rul Cnn 2022 42		SAT	6.40	6.30	6.06	13.7	1.67	15.2	457
2025 Collins Rul Cnn 2022 43		UNSAT	7.14	12.5	6.39	13.5	1.46	16.7	-
2025 Collins Rul Cnn 2022 44		UNSAT	7.13	15.5	6.39	13.6	1.54	16.5	-
2025 Collins Rul Cnn 2022 45		UNSAT	7.13	18.5	6.43	13.5	1.54	16.9	-
2025 Collins Rul Cnn 2022 46		UNSAT	7.14	26.7	6.31	13.5	1.42	16.8	-
2025 Collins Rul Cnn 2022 47		UNSAT	6.36	6.37	6.11	13.8	1.58	15.6	-
2025 Collins Rul Cnn 2022 48		UNSAT	6.41	6.37	6.11	13.7	1.51	15.1	-
2025 Collins Rul Cnn 2022 49		UNSAT	7.12	18.5	6.34	13.5	1.55	16.4	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Collins Rul Cnn 2022 50		UNSAT	6.38	6.34	6.10	13.6	1.53	15.2	-
2025 Collins Rul Cnn 2022 51		UNSAT	7.21	18.5	6.36	13.5	1.68	16.7	-
2025 Collins Rul Cnn 2022 52		UNSAT	7.19	26.7	6.48	13.5	1.57	16.6	-
2025 Collins Rul Cnn 2022 53		UNSAT	7.20	26.7	6.50	13.5	1.56	16.9	-
2025 Collins Rul Cnn 2022 54		UNSAT	6.39	6.37	6.07	13.7	1.56	15.2	-
2025 Collins Rul Cnn 2022 55		UNSAT	7.14	26.7	6.45	13.4	1.56	17.1	-
2025 Collins Rul Cnn 2022 56		UNSAT	7.11	26.7	6.46	13.5	1.58	17.1	-
2025 Collins Rul Cnn 2022 57		UNSAT	7.16	26.7	6.63	13.5	1.58	17.4	-
2025 Collins Rul Cnn 2022 58		UNSAT	7.13	26.7	6.70	13.5	1.45	19.3	-
2025 Collins Rul Cnn 2022 59		UNSAT	7.14	18.5	6.36	13.4	1.53	16.5	-
2025 Collins Rul Cnn 2022 60		UNSAT	7.13	26.7	6.36	13.4	1.53	16.5	-
2025 Collins Rul Cnn 2022 61		UNSAT	7.13	26.7	6.34	13.4	1.46	17.1	-
2025 Cora 2024	0	SAT	6.26	6.68	7.84	12.4	-	-	-
2025 Cora 2024	1	SAT	6.23	6.74	7.89	12.4	-	-	-
2025 Cora 2024	2	UNSAT	6.97	9.25	8.89	12.2	1.29	23.4	-
2025 Cora 2024	3	SAT	6.26	6.12	7.82	12.4	-	16.8	-
2025 Cora 2024	4	?	-	-	-	-	-	-	-
2025 Cora 2024	5	UNSAT	6.99	9.27	8.68	11.2	1.28	22.4	-
2025 Cora 2024	6	SAT	6.30	6.71	7.89	12.5	-	-	-
2025 Cora 2024	7	?	-	-	-	-	-	-	-
2025 Cora 2024	8	UNSAT	7.02	9.26	8.21	12.2	1.35	18.4	-
2025 Cora 2024	9	?	-	-	-	-	-	-	-
2025 Cora 2024	10	?	-	-	-	-	-	-	-
2025 Cora 2024	11	UNSAT	7.07	9.25	8.31	12.2	1.32	18.4	-
2025 Cora 2024	12	SAT	6.31	6.74	7.87	11.4	-	-	-
2025 Cora 2024	13	?	-	-	-	-	-	-	-
2025 Cora 2024	14	UNSAT	7.04	9.23	8.92	12.2	1.28	20.4	-
2025 Cora 2024	15	SAT	6.27	6.80	7.89	-	-	-	-
2025 Cora 2024	16	?	-	-	-	-	-	-	-
2025 Cora 2024	17	UNSAT	7.00	9.22	8.46	11.2	1.30	18.3	-
2025 Cora 2024	18	SAT	6.29	6.72	7.88	11.4	-	-	-
2025 Cora 2024	19	?	-	-	-	-	-	-	-
2025 Cora 2024	20	UNSAT	7.01	9.25	8.53	11.1	1.28	18.7	-
2025 Cora 2024	21	SAT	6.30	6.71	7.82	12.4	-	-	-
2025 Cora 2024	22	?	-	-	-	-	-	-	-
2025 Cora 2024	23	UNSAT	6.98	9.24	8.19	12.2	1.27	18.6	-
2025 Cora 2024	24	SAT	6.30	6.72	7.83	12.4	-	-	-
2025 Cora 2024	25	?	-	-	-	-	-	-	-
2025 Cora 2024	26	UNSAT	7.01	9.25	8.52	12.2	1.29	19.2	-
2025 Cora 2024	27	SAT	6.30	6.71	7.78	12.4	-	-	-
2025 Cora 2024	28	?	-	-	-	-	-	-	-
2025 Cora 2024	29	UNSAT	6.97	9.25	8.91	12.2	1.30	23.2	-
2025 Cora 2024	30	SAT	6.28	6.67	7.86	-	-	-	-
2025 Cora 2024	31	?	-	-	-	-	-	-	-
2025 Cora 2024	32	UNSAT	7.01	9.30	8.63	12.2	1.27	18.8	-
2025 Cora 2024	33	SAT	6.33	6.91	7.82	-	-	-	-
2025 Cora 2024	34	?	-	-	-	-	-	-	-
2025 Cora 2024	35	UNSAT	7.01	9.23	8.30	12.2	1.27	18.5	-
2025 Cora 2024	36	SAT	6.32	6.72	7.85	13.2	-	-	-
2025 Cora 2024	37	?	-	-	-	-	-	-	-
2025 Cora 2024	38	UNSAT	7.01	9.27	8.86	12.2	1.27	23.5	-
2025 Cora 2024	39	SAT	6.24	6.71	7.78	11.4	-	16.4	-
2025 Cora 2024	40	?	-	-	-	-	-	-	-
2025 Cora 2024	41	UNSAT	7.03	9.24	8.57	12.1	1.28	19.8	-
2025 Cora 2024	42	?	-	-	-	-	-	-	-
2025 Cora 2024	43	?	-	-	-	-	-	-	-
2025 Cora 2024	44	UNSAT	6.99	9.25	8.75	12.2	1.27	18.3	-
2025 Cora 2024	45	SAT	6.26	6.71	7.91	12.4	-	-	-
2025 Cora 2024	46	?	-	-	-	-	-	-	-
2025 Cora 2024	47	SAT	6.29	6.69	7.84	12.4	17.8	-	-
2025 Cora 2024	48	SAT	6.26	6.28	7.86	12.4	-	16.5	-
2025 Cora 2024	49	SAT	6.36	6.73	-	-	-	-	-
2025 Cora 2024	50	UNSAT	7.03	9.21	8.94	12.2	1.38	20.3	-
2025 Cora 2024	51	SAT	6.31	6.68	7.80	12.4	-	-	-
2025 Cora 2024	52	?	-	-	-	-	-	-	-
2025 Cora 2024	53	UNSAT	6.98	9.23	8.47	12.2	1.27	18.4	-
2025 Cora 2024	54	SAT	6.30	6.68	7.78	11.5	-	17.0	-
2025 Cora 2024	55	?	-	-	-	-	-	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Cora 2024	56	UNSAT	7.02	9.24	8.90	12.1	1.28	20.6	-
2025 Cora 2024	57	SAT	6.28	6.67	7.82	12.4	-	-	-
2025 Cora 2024	58	?	-	-	-	-	-	-	-
2025 Cora 2024	59	UNSAT	6.96	9.22	8.96	12.1	1.27	24.9	-
2025 Cora 2024	60	SAT	6.29	6.87	7.87	12.8	-	17.3	-
2025 Cora 2024	61	SAT	6.29	6.87	7.86	12.5	-	-	-
2025 Cora 2024	62	SAT	6.32	6.87	7.87	12.4	-	17.9	-
2025 Cora 2024	63	SAT	6.23	6.32	7.83	12.5	-	17.2	-
2025 Cora 2024	64	SAT	6.28	6.84	7.86	12.5	-	-	-
2025 Cora 2024	65	SAT	6.26	6.31	7.82	12.5	-	17.5	-
2025 Cora 2024	66	SAT	6.31	6.28	7.83	12.5	-	17.5	-
2025 Cora 2024	67	SAT	6.33	6.42	7.88	12.5	-	17.4	-
2025 Cora 2024	68	SAT	6.27	6.27	7.80	12.5	-	17.2	-
2025 Cora 2024	69	SAT	6.27	7.01	7.87	12.5	-	17.4	-
2025 Cora 2024	70	SAT	6.34	6.38	7.86	12.5	-	17.4	-
2025 Cora 2024	71	SAT	6.25	6.26	7.85	11.5	3.43	17.4	-
2025 Cora 2024	72	SAT	6.29	6.38	7.86	12.5	-	17.6	-
2025 Cora 2024	73	SAT	6.26	6.29	7.84	12.4	-	17.5	-
2025 Cora 2024	74	SAT	6.26	6.83	7.87	12.5	-	17.4	-
2025 Cora 2024	75	SAT	6.29	6.39	7.81	12.5	-	17.3	-
2025 Cora 2024	76	SAT	6.25	6.28	7.80	12.5	-	17.3	-
2025 Cora 2024	77	SAT	6.28	6.83	7.85	12.5	-	-	-
2025 Cora 2024	78	SAT	6.32	6.97	7.84	12.5	-	17.4	-
2025 Cora 2024	79	SAT	6.28	6.43	7.80	12.5	-	17.4	-
2025 Cora 2024	80	SAT	6.30	6.84	7.83	12.4	-	-	-
2025 Cora 2024	81	SAT	6.25	6.38	7.81	12.5	-	17.6	-
2025 Cora 2024	82	SAT	6.30	6.34	7.77	11.5	-	17.3	-
2025 Cora 2024	83	SAT	6.25	6.25	7.78	12.5	-	17.3	-
2025 Cora 2024	84	SAT	6.30	6.32	7.78	12.5	-	17.3	-
2025 Cora 2024	85	SAT	6.30	6.32	7.79	12.5	-	17.4	-
2025 Cora 2024	86	SAT	6.31	6.80	7.84	12.5	-	-	-
2025 Cora 2024	87	SAT	6.29	6.37	7.80	12.5	-	17.2	-
2025 Cora 2024	88	SAT	6.27	6.37	7.78	12.5	-	17.3	-
2025 Cora 2024	89	SAT	6.30	6.85	7.85	12.5	-	17.3	-
2025 Cora 2024	90	SAT	6.29	6.31	7.79	11.6	-	17.3	-
2025 Cora 2024	91	SAT	6.27	6.25	7.79	12.5	-	17.2	-
2025 Cora 2024	92	SAT	6.30	6.84	7.81	12.5	-	-	-
2025 Cora 2024	93	SAT	6.27	6.31	7.81	12.5	-	17.1	-
2025 Cora 2024	94	SAT	6.24	6.52	7.78	11.4	-	17.4	-
2025 Cora 2024	95	SAT	6.33	6.84	7.85	12.4	-	-	-
2025 Cora 2024	96	SAT	6.29	6.46	7.85	12.5	-	17.5	-
2025 Cora 2024	97	SAT	6.30	6.30	7.83	12.5	-	17.6	-
2025 Cora 2024	98	SAT	6.32	6.85	7.82	11.5	-	17.2	-
2025 Cora 2024	99	SAT	6.27	6.30	7.84	12.4	-	17.3	-
2025 Cora 2024	100	SAT	6.31	6.89	7.83	12.5	-	17.4	-
2025 Cora 2024	101	SAT	6.33	6.81	7.85	12.5	-	-	-
2025 Cora 2024	102	SAT	6.29	6.40	7.85	11.5	-	17.4	-
2025 Cora 2024	103	SAT	6.28	6.32	7.84	12.5	-	17.4	-
2025 Cora 2024	104	SAT	6.26	6.45	7.87	12.5	-	17.1	-
2025 Cora 2024	105	SAT	6.28	6.31	7.89	11.5	-	17.4	-
2025 Cora 2024	106	SAT	6.26	6.34	7.82	12.5	-	17.4	-
2025 Cora 2024	107	SAT	6.29	6.31	7.84	12.5	-	17.2	-
2025 Cora 2024	108	SAT	6.26	6.27	7.86	11.4	-	17.3	-
2025 Cora 2024	109	SAT	6.25	6.28	7.82	12.5	-	17.3	-
2025 Cora 2024	110	SAT	6.28	6.40	7.82	12.5	-	17.3	-
2025 Cora 2024	111	SAT	6.26	6.28	7.87	12.5	-	17.7	-
2025 Cora 2024	112	SAT	6.29	6.29	7.81	11.5	-	17.4	-
2025 Cora 2024	113	SAT	6.34	6.51	7.80	12.6	-	17.3	-
2025 Cora 2024	114	SAT	6.39	6.29	7.88	12.5	-	17.4	-
2025 Cora 2024	115	SAT	6.31	6.50	7.82	12.5	-	17.1	-
2025 Cora 2024	116	SAT	6.34	6.83	7.88	12.5	-	-	-
2025 Cora 2024	117	SAT	6.24	6.28	7.86	12.5	-	17.9	-
2025 Cora 2024	118	SAT	6.26	6.26	7.84	11.5	-	17.3	-
2025 Cora 2024	119	SAT	6.27	6.86	7.86	12.5	-	-	-
2025 Cora 2024	120	SAT	6.32	6.90	7.87	12.5	-	-	-
2025 Cora 2024	121	SAT	6.29	6.81	-	12.5	-	-	-
2025 Cora 2024	122	SAT	6.34	6.86	7.88	12.4	-	-	-
2025 Cora 2024	123	SAT	6.31	6.84	7.84	11.5	-	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Cora 2024	124	SAT	6.29	6.88	7.87	12.5	-	-	-
2025 Cora 2024	125	SAT	6.29	6.82	7.90	11.5	-	-	-
2025 Cora 2024	126	SAT	6.34	6.80	7.86	12.7	-	-	-
2025 Cora 2024	127	?	-	-	-	-	-	-	-
2025 Cora 2024	128	UNSAT	7.90	25.1	-	-	-	-	-
2025 Cora 2024	129	SAT	6.29	6.89	7.86	12.5	-	-	-
2025 Cora 2024	130	SAT	6.28	6.85	7.91	12.5	-	-	-
2025 Cora 2024	131	UNSAT	7.90	-	-	-	-	-	-
2025 Cora 2024	132	SAT	6.32	6.85	7.90	12.5	-	-	-
2025 Cora 2024	133	SAT	6.34	6.79	7.89	-	-	-	-
2025 Cora 2024	134	SAT	6.31	6.84	7.87	11.5	-	-	-
2025 Cora 2024	135	SAT	6.29	6.93	7.82	11.5	-	-	-
2025 Cora 2024	136	SAT	6.32	6.80	7.87	12.4	-	-	-
2025 Cora 2024	137	SAT	6.31	6.84	7.90	12.5	-	-	-
2025 Cora 2024	138	?	-	-	-	-	-	-	-
2025 Cora 2024	139	?	-	-	-	-	-	-	-
2025 Cora 2024	140	SAT	6.33	6.83	7.88	12.5	20.8	-	-
2025 Cora 2024	141	SAT	6.29	6.82	7.88	-	-	-	-
2025 Cora 2024	142	SAT	6.28	6.88	7.90	12.5	-	-	-
2025 Cora 2024	143	SAT	6.31	6.84	7.85	12.5	-	-	-
2025 Cora 2024	144	SAT	6.27	6.97	7.85	-	-	-	-
2025 Cora 2024	145	?	-	-	-	-	-	-	-
2025 Cora 2024	146	SAT	6.30	6.82	7.88	12.5	-	-	-
2025 Cora 2024	147	SAT	6.28	6.85	7.86	12.5	-	-	-
2025 Cora 2024	148	SAT	6.31	6.88	7.92	12.5	-	-	-
2025 Cora 2024	149	?	-	-	-	-	-	-	-
2025 Cora 2024	150	SAT	6.32	6.83	7.89	12.5	-	-	-
2025 Cora 2024	151	SAT	6.31	6.81	7.93	11.5	-	-	-
2025 Cora 2024	152	SAT	6.30	6.85	7.92	12.5	-	-	-
2025 Cora 2024	153	SAT	6.32	6.84	7.88	12.5	-	-	-
2025 Cora 2024	154	SAT	6.28	6.83	7.88	12.4	-	-	-
2025 Cora 2024	155	SAT	6.30	6.83	7.96	11.5	-	-	-
2025 Cora 2024	156	SAT	6.31	6.83	7.95	12.5	-	-	-
2025 Cora 2024	157	SAT	6.30	6.86	7.88	11.8	-	17.3	-
2025 Cora 2024	158	SAT	6.34	6.89	7.88	12.8	-	-	-
2025 Cora 2024	159	SAT	6.31	6.85	7.88	11.4	-	-	-
2025 Cora 2024	160	SAT	6.30	6.82	-	12.5	-	-	-
2025 Cora 2024	161	SAT	6.28	6.83	7.91	12.5	-	-	-
2025 Cora 2024	162	SAT	6.28	6.93	7.91	11.5	-	-	-
2025 Cora 2024	163	SAT	6.27	6.85	7.90	12.5	-	-	-
2025 Cora 2024	164	SAT	6.33	6.85	7.90	12.6	-	-	-
2025 Cora 2024	165	SAT	6.30	6.87	7.80	12.5	-	-	-
2025 Cora 2024	166	SAT	6.28	6.88	7.87	12.5	-	-	-
2025 Cora 2024	167	SAT	6.29	6.84	7.90	12.5	-	-	-
2025 Cora 2024	168	SAT	6.31	6.86	7.92	12.5	-	-	-
2025 Cora 2024	169	SAT	6.30	6.83	7.90	12.5	-	-	-
2025 Cora 2024	170	SAT	6.27	6.83	7.91	12.5	-	-	-
2025 Cora 2024	171	SAT	6.26	6.49	7.84	12.5	-	17.3	-
2025 Cora 2024	172	?	-	-	-	-	-	-	-
2025 Cora 2024	173	UNSAT	7.14	9.40	9.01	-	-	-	-
2025 Cora 2024	174	SAT	6.33	6.90	7.92	11.5	-	-	-
2025 Cora 2024	175	SAT	6.28	6.28	7.88	12.5	-	17.5	-
2025 Cora 2024	176	?	-	-	-	-	-	-	-
2025 Cora 2024	177	SAT	6.31	6.84	7.89	12.5	-	-	-
2025 Cora 2024	178	SAT	6.31	6.90	7.88	12.5	-	-	-
2025 Cora 2024	179	SAT	6.31	6.80	7.87	12.5	27.0	-	-
2025 Dist Shift 2023	0	UNSAT	8.31	27.0	8.34	15.3	-	-	-
2025 Dist Shift 2023	1	UNSAT	6.44	26.7	7.15	15.0	-	59.3	-
2025 Dist Shift 2023	2	UNSAT	8.29	26.9	7.53	14.4	-	69.1	-
2025 Dist Shift 2023	3	UNSAT	6.47	26.8	7.06	13.7	-	57.7	-
2025 Dist Shift 2023	4	UNSAT	6.40	26.8	7.20	13.4	-	58.2	-
2025 Dist Shift 2023	5	UNSAT	6.47	26.8	7.17	13.9	-	60.3	-
2025 Dist Shift 2023	6	UNSAT	6.75	26.9	7.22	13.9	-	59.7	-
2025 Dist Shift 2023	7	UNSAT	6.41	26.9	7.08	13.4	-	57.7	-
2025 Dist Shift 2023	8	UNSAT	8.25	27.0	13.5	14.4	-	-	-
2025 Dist Shift 2023	9	UNSAT	8.32	26.9	8.97	14.4	-	-	-
2025 Dist Shift 2023	10	UNSAT	6.77	26.9	7.31	14.7	-	58.3	-
2025 Dist Shift 2023	11	UNSAT	6.45	26.8	7.12	13.4	-	59.4	-

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Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Dist Shift 2023	12	UNSAT	8.36	27.0	8.20	14.5	-	-	-
2025 Dist Shift 2023	13	UNSAT	8.29	26.9	7.18	13.9	-	-	-
2025 Dist Shift 2023	14	UNSAT	6.38	26.8	7.31	14.0	-	59.2	-
2025 Dist Shift 2023	15	SAT	7.03	6.13	6.12	13.7	-	17.5	-
2025 Dist Shift 2023	16	UNSAT	13.1	27.2	-	16.7	-	90.2	-
2025 Dist Shift 2023	17	UNSAT	6.77	26.9	7.18	13.9	-	60.8	-
2025 Dist Shift 2023	18	UNSAT	6.47	26.9	7.29	14.2	-	59.5	-
2025 Dist Shift 2023	19	UNSAT	6.48	26.9	7.26	14.0	-	61.5	-
2025 Dist Shift 2023	20	UNSAT	6.97	6.68	6.16	14.2	-	-	-
2025 Dist Shift 2023	21	UNSAT	6.97	26.8	7.34	16.0	-	63.4	-
2025 Dist Shift 2023	22	UNSAT	6.44	26.7	7.24	13.8	-	57.7	-
2025 Dist Shift 2023	23	UNSAT	7.01	6.67	6.19	13.7	-	-	-
2025 Dist Shift 2023	24	SAT	6.97	6.63	6.15	13.7	-	16.8	-
2025 Dist Shift 2023	25	UNSAT	6.92	26.9	7.37	16.5	-	61.3	-
2025 Dist Shift 2023	26	UNSAT	6.89	26.9	7.26	14.0	-	-	-
2025 Dist Shift 2023	27	UNSAT	6.44	26.8	7.25	13.6	-	58.6	-
2025 Dist Shift 2023	28	UNSAT	6.89	26.9	7.29	14.2	-	-	-
2025 Dist Shift 2023	29	UNSAT	6.95	27.1	7.37	15.5	-	60.6	-
2025 Dist Shift 2023	30	UNSAT	6.42	26.8	7.08	13.7	-	58.7	-
2025 Dist Shift 2023	31	UNSAT	6.44	26.9	7.18	13.4	-	61.2	-
2025 Dist Shift 2023	32	UNSAT	8.64	26.9	18.1	14.5	-	-	-
2025 Dist Shift 2023	33	UNSAT	6.45	26.8	6.96	13.7	-	57.3	-
2025 Dist Shift 2023	34	UNSAT	6.45	26.8	7.37	14.0	-	60.6	-
2025 Dist Shift 2023	35	UNSAT	6.82	26.9	7.27	14.0	-	-	-
2025 Dist Shift 2023	36	UNSAT	6.81	26.8	7.33	14.4	-	62.1	-
2025 Dist Shift 2023	37	UNSAT	6.38	26.9	7.22	14.2	-	61.9	-
2025 Dist Shift 2023	38	UNSAT	6.45	26.8	7.01	13.5	-	58.2	-
2025 Dist Shift 2023	39	UNSAT	8.28	26.9	10.4	14.5	-	-	-
2025 Dist Shift 2023	40	UNSAT	6.45	26.8	7.20	13.7	-	58.3	-
2025 Dist Shift 2023	41	UNSAT	6.83	26.9	7.29	14.2	-	59.1	-
2025 Dist Shift 2023	42	UNSAT	7.03	6.73	6.12	14.5	-	-	-
2025 Dist Shift 2023	43	UNSAT	6.46	26.9	7.31	14.7	-	61.7	-
2025 Dist Shift 2023	44	UNSAT	6.43	26.8	7.29	15.2	-	75.5	-
2025 Dist Shift 2023	45	UNSAT	6.45	26.9	7.24	13.5	-	60.1	-
2025 Dist Shift 2023	46	SAT	7.02	6.19	6.11	13.7	-	16.7	-
2025 Dist Shift 2023	47	UNSAT	6.41	26.8	7.16	13.7	-	60.0	-
2025 Dist Shift 2023	48	UNSAT	9.88	27.4	20.3	15.3	-	-	-
2025 Dist Shift 2023	49	UNSAT	6.41	26.8	6.96	13.7	-	58.0	-
2025 Dist Shift 2023	50	UNSAT	6.44	26.8	6.94	14.0	-	57.9	-
2025 Dist Shift 2023	51	UNSAT	10.0	27.3	40.0	16.1	-	-	-
2025 Dist Shift 2023	52	UNSAT	6.86	26.9	7.24	14.0	-	-	-
2025 Dist Shift 2023	53	UNSAT	6.40	26.8	7.15	13.7	-	58.6	-
2025 Dist Shift 2023	54	UNSAT	6.70	26.9	7.33	14.0	-	61.4	-
2025 Dist Shift 2023	55	UNSAT	8.30	26.9	7.43	15.0	-	62.4	-
2025 Dist Shift 2023	56	UNSAT	6.41	26.9	7.28	13.5	-	59.6	-
2025 Dist Shift 2023	57	UNSAT	6.42	26.8	7.20	14.0	-	62.4	-
2025 Dist Shift 2023	58	UNSAT	8.99	26.9	7.35	14.4	-	-	-
2025 Dist Shift 2023	59	UNSAT	6.58	26.9	7.39	14.7	-	62.8	-
2025 Dist Shift 2023	60	UNSAT	6.45	26.8	7.35	13.7	-	60.2	-
2025 Dist Shift 2023	61	UNSAT	6.38	26.8	7.26	14.5	-	61.0	-
2025 Dist Shift 2023	62	UNSAT	6.91	26.9	7.33	14.2	-	90.3	-
2025 Dist Shift 2023	63	UNSAT	6.43	26.8	7.17	13.7	-	60.3	-
2025 Dist Shift 2023	64	UNSAT	6.40	26.7	7.12	13.7	-	58.4	-
2025 Dist Shift 2023	65	UNSAT	6.39	26.9	7.06	13.6	-	58.7	-
2025 Dist Shift 2023	66	UNSAT	6.76	26.9	7.18	13.9	-	58.5	-
2025 Dist Shift 2023	67	UNSAT	6.42	26.7	7.16	13.7	-	60.7	-
2025 Dist Shift 2023	68	UNSAT	6.80	26.8	7.28	14.5	-	61.3	-
2025 Dist Shift 2023	69	SAT	7.02	6.11	6.15	13.7	-	16.9	-
2025 Dist Shift 2023	70	UNSAT	6.39	26.8	7.10	13.7	-	57.0	-
2025 Dist Shift 2023	71	UNSAT	8.66	26.9	12.0	14.4	-	-	-
2025 Linearizenn 2024	0	SAT	6.52	7.11	12.4	13.4	2.07	16.5	3.02
2025 Linearizenn 2024	1	UNSAT	6.51	26.6	6.40	12.0	1.80	66.8	2.97
2025 Linearizenn 2024	2	UNSAT	6.52	26.6	6.47	13.2	1.86	68.5	2.99
2025 Linearizenn 2024	3	UNSAT	6.51	26.7	6.78	13.2	1.96	68.5	2.97
2025 Linearizenn 2024	4	UNSAT	6.52	26.7	6.45	13.0	1.85	67.8	2.97
2025 Linearizenn 2024	5	UNSAT	6.54	26.7	6.54	12.0	1.84	69.2	2.99
2025 Linearizenn 2024	6	UNSAT	8.09	26.8	8.66	14.5	2.74	-	3.01
2025 Linearizenn 2024	7	UNSAT	6.48	26.6	6.43	13.2	1.99	68.4	2.99

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Linearizenn 2024	8	UNSAT 6.52	26.6	6.12	11.9	2.11	68.9	2.99
2025 Linearizenn 2024	9	UNSAT 6.52	26.6	6.45	13.2	2.24	68.9	3.11
2025 Linearizenn 2024	10	UNSAT 6.50	26.7	7.10	13.2	2.28	69.2	3.09
2025 Linearizenn 2024	11	UNSAT 7.81	26.6	6.48	13.2	2.07	68.9	3.06
2025 Linearizenn 2024	12	UNSAT 8.40	26.9	12.1	14.5	9.57	-	3.10
2025 Linearizenn 2024	13	UNSAT 8.08	26.9	9.29	14.2	5.80	69.0	3.05
2025 Linearizenn 2024	14	UNSAT 8.04	26.8	9.24	13.0	5.31	69.2	2.99
2025 Linearizenn 2024	15	UNSAT 8.07	26.7	8.68	13.7	2.92	-	2.98
2025 Linearizenn 2024	16	UNSAT 8.03	26.7	8.63	12.7	3.87	-	3.01
2025 Linearizenn 2024	17	UNSAT 7.93	26.7	7.92	12.7	3.47	-	2.98
2025 Linearizenn 2024	18	UNSAT 8.45	26.9	14.8	15.5	4.67	68.1	2.96
2025 Linearizenn 2024	19	UNSAT 8.11	26.7	9.56	14.0	3.05	69.1	2.95
2025 Linearizenn 2024	20	UNSAT 7.91	26.7	8.87	14.0	2.82	-	2.98
2025 Linearizenn 2024	21	UNSAT 8.04	26.7	9.28	14.3	3.00	-	2.98
2025 Linearizenn 2024	22	UNSAT 8.09	26.7	9.28	14.2	2.96	-	2.99
2025 Linearizenn 2024	23	UNSAT 8.17	26.7	9.74	14.2	3.17	69.1	2.96
2025 Linearizenn 2024	24	UNSAT 8.51	27.1	26.4	16.5	9.02	-	2.97
2025 Linearizenn 2024	25	UNSAT 8.38	27.0	16.3	15.8	5.55	-	2.99
2025 Linearizenn 2024	26	UNSAT 8.26	26.9	14.0	15.2	4.94	69.3	2.97
2025 Linearizenn 2024	27	UNSAT 8.36	26.9	14.0	15.3	5.28	-	3.00
2025 Linearizenn 2024	28	UNSAT 8.30	26.9	16.1	14.5	5.52	-	2.99
2025 Linearizenn 2024	29	UNSAT 8.20	26.9	14.7	15.2	4.95	-	2.98
2025 Linearizenn 2024	30	UNSAT 8.58	27.9	31.5	17.5	19.5	69.0	2.96
2025 Linearizenn 2024	31	UNSAT 8.31	27.7	17.7	15.5	8.61	-	2.98
2025 Linearizenn 2024	32	UNSAT 8.28	27.7	15.8	14.2	7.30	-	2.97
2025 Linearizenn 2024	33	UNSAT 8.18	27.8	16.4	14.9	8.20	69.0	3.01
2025 Linearizenn 2024	34	UNSAT 8.16	27.8	14.3	14.0	5.91	68.8	2.98
2025 Linearizenn 2024	35	UNSAT 8.14	27.8	15.4	15.0	6.54	68.5	3.00
2025 Linearizenn 2024	36	UNSAT 8.49	27.1	13.6	15.0	10.8	69.4	2.97
2025 Linearizenn 2024	37	UNSAT 8.13	26.9	8.92	14.1	4.65	69.3	2.98
2025 Linearizenn 2024	38	UNSAT 7.86	26.9	7.69	14.0	3.19	69.3	2.99
2025 Linearizenn 2024	39	UNSAT 8.19	27.0	9.83	13.0	3.89	69.5	2.97
2025 Linearizenn 2024	40	UNSAT 8.08	26.9	9.41	13.0	4.90	69.2	2.99
2025 Linearizenn 2024	41	UNSAT 8.09	27.0	9.48	14.0	3.83	68.9	2.97
2025 Linearizenn 2024	42	UNSAT 8.55	26.9	19.2	16.3	9.09	69.5	2.97
2025 Linearizenn 2024	43	UNSAT 8.14	26.9	9.59	14.2	4.42	-	2.96
2025 Linearizenn 2024	44	UNSAT 8.21	26.9	12.6	13.8	5.57	-	2.99
2025 Linearizenn 2024	45	UNSAT 8.29	26.9	12.4	14.8	5.95	-	2.98
2025 Linearizenn 2024	46	UNSAT 8.19	26.9	11.0	14.5	4.83	69.4	2.98
2025 Linearizenn 2024	47	UNSAT 8.42	26.9	13.2	14.7	5.78	-	2.99
2025 Linearizenn 2024	48	UNSAT 8.35	26.9	11.5	15.1	6.70	69.5	2.99
2025 Linearizenn 2024	49	UNSAT 8.22	26.9	8.60	13.9	4.01	69.5	2.98
2025 Linearizenn 2024	50	UNSAT 8.12	26.8	8.69	13.9	3.56	70.5	2.97
2025 Linearizenn 2024	51	UNSAT 8.14	26.8	9.03	14.0	3.80	69.2	2.97
2025 Linearizenn 2024	52	UNSAT 8.15	26.9	8.52	13.9	3.78	69.2	2.98
2025 Linearizenn 2024	53	UNSAT 8.13	26.8	9.39	12.7	3.06	68.5	2.97
2025 Linearizenn 2024	54	UNSAT 7.99	26.7	7.84	14.0	2.12	69.5	2.98
2025 Linearizenn 2024	55	UNSAT 7.99	26.7	7.22	13.2	2.00	69.9	2.95
2025 Linearizenn 2024	56	UNSAT 7.85	26.6	6.54	11.9	1.87	68.9	2.97
2025 Linearizenn 2024	57	UNSAT 7.87	26.7	6.78	13.2	2.01	69.7	3.00
2025 Linearizenn 2024	58	UNSAT 7.85	26.6	6.91	13.0	1.88	69.4	2.97
2025 Linearizenn 2024	59	UNSAT 7.96	26.6	7.36	13.7	1.97	69.5	2.99
2025 Malbeware	0	UNSAT 6.27	16.4	7.85	11.0	3.88	49.1	-
2025 Malbeware	1	UNSAT 6.24	16.3	7.83	11.9	3.89	52.3	-
2025 Malbeware	2	UNSAT 6.25	16.3	7.85	12.0	3.86	51.8	-
2025 Malbeware	3	UNSAT 6.24	16.3	7.85	10.9	3.86	51.7	-
2025 Malbeware	4	UNSAT 6.25	16.3	7.86	11.9	3.89	51.6	-
2025 Malbeware	5	UNSAT 6.24	16.3	7.85	11.9	3.89	52.3	-
2025 Malbeware	6	UNSAT 6.22	16.3	7.84	12.0	3.85	51.5	-
2025 Malbeware	7	UNSAT 6.23	16.3	7.88	11.9	3.88	51.8	-
2025 Malbeware	8	UNSAT 6.18	16.3	7.89	12.0	3.88	51.4	-
2025 Malbeware	9	UNSAT 6.22	16.4	7.84	11.9	3.92	51.7	-
2025 Malbeware	10	UNSAT 6.21	16.3	7.86	11.9	3.89	51.7	-
2025 Malbeware	11	UNSAT 6.23	16.3	7.85	12.0	3.90	51.6	-
2025 Malbeware	12	UNSAT 6.20	16.3	7.85	12.0	3.87	50.5	-
2025 Malbeware	13	UNSAT 6.23	16.3	7.91	11.9	3.86	51.2	-
2025 Malbeware	14	UNSAT 6.24	16.3	7.88	11.9	3.91	51.7	-
2025 Malbeware	15	UNSAT 6.23	16.3	7.84	11.9	3.87	52.2	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Malbeware	16	UNSAT	6.22	16.3	7.91	11.9	3.89	51.9	-
2025 Malbeware	17	UNSAT	6.22	16.3	7.86	10.9	3.84	51.6	-
2025 Malbeware	18	UNSAT	6.23	16.3	7.87	12.0	3.90	51.9	-
2025 Malbeware	19	UNSAT	6.23	16.3	7.89	11.9	4.02	51.9	-
2025 Malbeware	20	UNSAT	6.24	16.3	7.87	12.0	3.88	52.3	-
2025 Malbeware	21	SAT	6.28	6.59	7.77	11.3	5.80	15.3	-
2025 Malbeware	22	UNSAT	6.22	16.3	7.84	10.9	3.87	50.8	-
2025 Malbeware	23	UNSAT	6.25	16.3	7.87	11.9	4.11	50.3	-
2025 Malbeware	24	UNSAT	6.24	16.3	7.89	10.9	3.87	52.1	-
2025 Malbeware	25	UNSAT	6.27	16.3	7.88	11.9	3.82	51.7	-
2025 Malbeware	26	UNSAT	6.24	16.3	7.88	11.9	3.90	52.6	-
2025 Malbeware	27	UNSAT	6.18	16.4	7.93	12.0	3.85	50.7	-
2025 Malbeware	28	UNSAT	6.24	16.3	7.87	11.9	3.92	51.5	-
2025 Malbeware	29	UNSAT	6.21	16.3	7.90	12.0	3.89	51.7	-
2025 Malbeware	30	UNSAT	6.22	16.3	7.85	11.9	3.91	52.3	-
2025 Malbeware	31	UNSAT	6.20	16.3	7.88	12.0	3.90	51.4	-
2025 Malbeware	32	UNSAT	6.20	16.3	7.89	12.0	3.92	51.3	-
2025 Malbeware	33	UNSAT	6.22	16.3	7.89	11.9	3.92	50.9	-
2025 Malbeware	34	UNSAT	6.21	16.4	7.91	11.9	3.87	51.7	-
2025 Malbeware	35	UNSAT	6.23	16.3	7.91	12.0	3.92	53.2	-
2025 Malbeware	36	UNSAT	6.22	16.4	7.88	11.9	3.88	51.1	-
2025 Malbeware	37	UNSAT	6.25	16.4	7.86	12.0	3.87	49.5	-
2025 Malbeware	38	UNSAT	6.24	16.3	7.88	10.9	3.89	50.8	-
2025 Malbeware	39	UNSAT	6.40	16.3	7.91	12.0	3.86	51.9	-
2025 Malbeware	40	UNSAT	6.21	16.3	7.92	12.0	3.88	51.5	-
2025 Malbeware	41	UNSAT	6.23	16.3	7.88	10.9	3.86	51.9	-
2025 Malbeware	42	UNSAT	6.19	16.3	7.94	11.9	3.90	52.2	-
2025 Malbeware	43	UNSAT	6.21	16.3	7.94	11.9	3.91	51.4	-
2025 Malbeware	44	UNSAT	6.22	16.3	7.90	11.9	3.95	51.2	-
2025 Malbeware	45	UNSAT	6.23	16.3	7.90	11.9	3.95	52.5	-
2025 Malbeware	46	UNSAT	6.23	16.3	7.90	11.9	3.85	52.0	-
2025 Malbeware	47	UNSAT	6.23	16.3	7.93	11.9	3.87	51.8	-
2025 Malbeware	48	UNSAT	6.22	16.3	7.93	12.0	3.86	51.9	-
2025 Malbeware	49	UNSAT	6.23	16.3	7.90	12.0	3.89	51.5	-
2025 Malbeware	50	UNSAT	6.51	16.7	8.87	12.8	8.92	-	-
2025 Malbeware	51	UNSAT	6.55	16.7	8.80	12.8	8.47	-	-
2025 Malbeware	52	UNSAT	16.2	-	-	-	-	-	-
2025 Malbeware	53	UNSAT	6.55	16.7	8.80	12.7	8.79	-	-
2025 Malbeware	54	UNSAT	6.55	16.7	8.80	12.8	8.79	-	-
2025 Malbeware	55	UNSAT	6.50	16.6	8.82	11.8	8.50	-	-
2025 Malbeware	56	SAT	7.26	7.27	8.62	13.3	84.5	-	-
2025 Malbeware	57	UNSAT	6.52	16.7	8.81	12.8	9.29	-	-
2025 Malbeware	58	UNSAT	6.50	16.7	8.78	12.8	9.25	-	-
2025 Malbeware	59	SAT	7.30	7.33	8.62	13.0	67.8	-	-
2025 Malbeware	60	UNSAT	6.52	16.7	8.86	12.9	8.65	-	-
2025 Malbeware	61	UNSAT	6.54	16.7	8.82	12.8	8.39	-	-
2025 Malbeware	62	UNSAT	6.52	16.7	8.81	12.7	9.36	-	-
2025 Malbeware	63	UNSAT	6.54	16.7	8.89	12.7	9.37	-	-
2025 Malbeware	64	UNSAT	6.60	16.7	8.81	12.8	8.28	-	-
2025 Malbeware	65	UNSAT	17.4	-	-	-	-	-	-
2025 Malbeware	66	UNSAT	6.52	16.7	8.76	12.9	8.24	-	-
2025 Malbeware	67	UNSAT	6.52	16.7	8.87	12.7	9.75	-	-
2025 Malbeware	68	UNSAT	6.51	16.7	8.80	12.8	8.37	-	-
2025 Malbeware	69	UNSAT	6.52	16.7	8.80	12.7	8.45	-	-
2025 Malbeware	70	UNSAT	6.53	16.7	8.79	12.6	8.07	-	-
2025 Malbeware	71	SAT	7.24	7.33	8.63	13.3	65.1	-	-
2025 Malbeware	72	UNSAT	6.50	16.7	8.87	12.8	10.2	-	-
2025 Malbeware	73	UNSAT	6.50	16.7	8.73	12.8	8.96	-	-
2025 Malbeware	74	UNSAT	6.52	16.7	8.87	13.0	8.75	-	-
2025 Malbeware	75	UNSAT	6.51	16.7	8.84	12.8	8.43	-	-
2025 Malbeware	76	UNSAT	11.4	25.3	-	-	-	-	-
2025 Malbeware	77	UNSAT	6.48	16.7	8.81	13.1	8.77	-	-
2025 Malbeware	78	UNSAT	6.52	16.7	8.82	12.8	8.11	-	-
2025 Malbeware	79	UNSAT	6.50	16.7	8.87	13.0	8.61	-	-
2025 Malbeware	80	UNSAT	6.49	16.7	8.82	12.8	8.30	-	-
2025 Malbeware	81	UNSAT	6.51	16.7	8.82	12.8	8.44	-	-
2025 Malbeware	82	SAT	7.24	7.28	8.62	13.0	57.3	-	-
2025 Malbeware	83	UNSAT	6.53	16.7	8.84	12.7	9.48	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Malbeware	84	UNSAT	6.56	16.7	8.73	12.8	8.59	-	-
2025 Malbeware	85	SAT	7.23	7.29	8.61	12.1	82.5	-	-
2025 Malbeware	86	UNSAT	6.51	16.7	8.81	12.8	8.41	-	-
2025 Malbeware	87	SAT	7.23	7.30	8.63	13.0	79.6	-	-
2025 Malbeware	88	UNSAT	6.51	16.7	8.83	13.1	8.87	-	-
2025 Malbeware	89	SAT	7.20	7.33	8.68	13.0	50.4	-	-
2025 Malbeware	90	UNSAT	6.51	16.7	8.79	12.8	8.69	-	-
2025 Malbeware	91	UNSAT	6.50	16.7	8.83	11.7	8.62	-	-
2025 Malbeware	92	UNSAT	6.48	16.7	8.79	12.8	8.41	-	-
2025 Malbeware	93	UNSAT	6.53	16.7	8.86	12.8	9.28	-	-
2025 Malbeware	94	SAT	7.19	7.35	8.62	13.0	54.3	-	-
2025 Malbeware	95	UNSAT	6.62	16.7	8.86	12.7	8.58	-	-
2025 Malbeware	96	UNSAT	6.52	16.7	8.82	12.7	9.21	-	-
2025 Malbeware	97	UNSAT	6.47	16.7	8.79	12.8	8.72	-	-
2025 Malbeware	98	UNSAT	6.48	16.7	8.85	12.8	8.82	-	-
2025 Malbeware	99	UNSAT	6.48	16.7	8.89	12.8	9.42	-	-
2025 Malbeware	100	UNSAT	6.56	16.7	9.18	-	25.1	-	-
2025 Malbeware	101	UNSAT	6.58	16.7	9.40	-	30.5	-	-
2025 Malbeware	102	SAT	7.30	7.35	-	-	-	-	-
2025 Malbeware	103	UNSAT	6.57	16.7	-	-	43.7	-	-
2025 Malbeware	104	UNSAT	6.54	16.7	9.20	-	30.8	-	-
2025 Malbeware	105	UNSAT	6.57	16.7	9.12	-	30.9	-	-
2025 Malbeware	106	UNSAT	17.0	-	-	-	-	-	-
2025 Malbeware	107	UNSAT	6.50	16.7	9.37	-	30.6	-	-
2025 Malbeware	108	UNSAT	6.57	16.7	-	-	38.7	-	-
2025 Malbeware	109	SAT	7.37	7.33	8.69	-	-	-	-
2025 Malbeware	110	UNSAT	6.58	16.7	9.23	-	30.3	-	-
2025 Malbeware	111	UNSAT	6.55	16.7	9.14	-	28.5	-	-
2025 Malbeware	112	SAT	7.30	7.32	8.68	-	-	-	-
2025 Malbeware	113	UNSAT	6.59	16.7	9.19	-	31.5	-	-
2025 Malbeware	114	UNSAT	6.58	16.7	9.13	-	28.7	-	-
2025 Malbeware	115	SAT	7.29	7.33	8.60	-	-	-	-
2025 Malbeware	116	UNSAT	6.60	16.7	-	-	41.8	-	-
2025 Malbeware	117	UNSAT	6.54	16.7	9.15	-	31.3	-	-
2025 Malbeware	118	UNSAT	6.58	16.7	9.06	-	22.0	-	-
2025 Malbeware	119	UNSAT	6.56	16.7	9.04	-	25.7	-	-
2025 Malbeware	120	UNSAT	6.59	16.7	9.09	-	25.0	-	-
2025 Malbeware	121	SAT	7.27	6.79	8.65	-	14.6	16.2	-
2025 Malbeware	122	UNSAT	6.51	16.7	9.39	-	32.7	-	-
2025 Malbeware	123	UNSAT	6.55	16.7	9.09	-	27.6	-	-
2025 Malbeware	124	UNSAT	6.58	16.7	9.14	-	29.7	-	-
2025 Malbeware	125	UNSAT	6.55	16.7	9.12	-	29.7	-	-
2025 Malbeware	126	SAT	7.32	7.35	8.67	-	-	-	-
2025 Malbeware	127	UNSAT	6.52	16.7	9.10	-	28.1	-	-
2025 Malbeware	128	UNSAT	6.58	16.7	9.02	-	25.5	-	-
2025 Malbeware	129	UNSAT	6.66	16.7	9.38	-	34.2	-	-
2025 Malbeware	130	UNSAT	6.54	16.7	9.06	-	25.9	-	-
2025 Malbeware	131	UNSAT	6.59	16.7	9.13	-	28.7	-	-
2025 Malbeware	132	SAT	7.29	7.36	8.62	-	-	-	-
2025 Malbeware	133	UNSAT	6.57	16.7	9.18	-	29.6	-	-
2025 Malbeware	134	UNSAT	6.57	16.7	9.02	-	30.5	-	-
2025 Malbeware	135	UNSAT	17.5	-	-	-	-	-	-
2025 Malbeware	136	UNSAT	6.55	16.7	9.11	-	27.9	-	-
2025 Malbeware	137	UNSAT	6.76	17.2	-	-	-	-	-
2025 Malbeware	138	UNSAT	6.58	16.7	9.10	-	26.8	-	-
2025 Malbeware	139	SAT	7.24	6.78	8.56	-	14.9	15.9	-
2025 Malbeware	140	UNSAT	6.54	16.7	9.38	-	33.0	-	-
2025 Malbeware	141	UNSAT	6.59	16.7	-	-	35.1	-	-
2025 Malbeware	142	UNSAT	6.56	16.7	9.20	-	29.5	-	-
2025 Malbeware	143	SAT	7.24	6.81	8.60	-	12.7	16.0	-
2025 Malbeware	144	SAT	7.29	7.31	8.63	-	-	-	-
2025 Malbeware	145	UNSAT	6.56	16.7	9.11	-	27.1	-	-
2025 Malbeware	146	UNSAT	6.53	16.7	9.33	-	31.4	-	-
2025 Malbeware	147	UNSAT	6.58	16.7	9.12	-	26.2	-	-
2025 Malbeware	148	UNSAT	6.58	16.7	9.11	-	27.7	-	-
2025 Malbeware	149	UNSAT	6.53	16.7	9.18	-	31.1	-	-
2025 Metaroom 2023	0	UNSAT	6.86	28.5	11.5	13.8	-	17.4	-
2025 Metaroom 2023	1	UNSAT	6.56	27.3	8.70	12.0	-	16.0	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Metaroom 2023	2	UNSAT	6.82	28.4	11.5	13.8	-	16.7	-
2025 Metaroom 2023	3	UNSAT	6.98	28.1	12.5	13.8	2.56	18.8	-
2025 Metaroom 2023	4	UNSAT	6.56	27.3	8.71	13.3	-	15.9	-
2025 Metaroom 2023	5	UNSAT	6.80	27.8	11.5	13.7	-	16.7	-
2025 Metaroom 2023	6	UNSAT	6.54	27.3	8.72	12.9	-	15.8	-
2025 Metaroom 2023	7	UNSAT	6.59	27.2	8.78	13.0	-	15.8	-
2025 Metaroom 2023	8	UNSAT	6.94	28.1	12.6	13.7	2.60	18.4	-
2025 Metaroom 2023	9	UNSAT	6.88	27.9	13.2	13.7	3.78	20.0	-
2025 Metaroom 2023	10	UNSAT	6.60	27.3	8.81	13.1	1.94	17.2	-
2025 Metaroom 2023	11	UNSAT	6.54	27.3	8.79	13.0	-	16.1	-
2025 Metaroom 2023	12	UNSAT	6.87	28.0	12.3	13.7	2.64	18.3	-
2025 Metaroom 2023	13	UNSAT	6.51	27.3	8.78	13.0	-	16.0	-
2025 Metaroom 2023	14	SAT	7.09	8.64	✗	14.1	-	-	-
2025 Metaroom 2023	15	UNSAT	6.52	27.2	8.87	13.0	1.84	17.6	-
2025 Metaroom 2023	16	UNSAT	6.81	27.6	11.5	13.7	-	17.0	-
2025 Metaroom 2023	17	UNSAT	6.96	27.7	12.8	13.8	2.55	18.6	-
2025 Metaroom 2023	18	UNSAT	6.77	27.8	11.5	13.7	-	16.6	-
2025 Metaroom 2023	19	UNSAT	6.91	28.4	12.6	13.7	2.52	18.2	-
2025 Metaroom 2023	20	UNSAT	6.50	27.2	8.90	12.9	1.81	17.3	-
2025 Metaroom 2023	21	UNSAT	6.54	27.3	8.73	13.0	-	16.3	-
2025 Metaroom 2023	22	UNSAT	8.34	27.5	9.46	-	3.26	17.8	-
2025 Metaroom 2023	23	UNSAT	6.53	27.3	8.82	13.0	1.82	17.2	-
2025 Metaroom 2023	24	UNSAT	6.55	27.3	8.87	13.2	1.83	17.4	-
2025 Metaroom 2023	25	UNSAT	6.51	27.3	8.82	12.0	1.82	17.5	-
2025 Metaroom 2023	26	SAT	7.03	8.44	✗	14.0	-	-	-
2025 Metaroom 2023	27	UNSAT	6.93	28.4	13.2	13.7	3.77	20.2	-
2025 Metaroom 2023	28	UNSAT	6.84	28.0	11.5	13.7	-	16.5	-
2025 Metaroom 2023	29	UNSAT	6.91	28.5	12.7	13.7	3.08	19.8	-
2025 Metaroom 2023	30	UNSAT	6.85	27.7	11.5	13.7	-	16.7	-
2025 Metaroom 2023	31	UNSAT	6.92	27.9	12.8	13.8	2.57	18.7	-
2025 Metaroom 2023	32	UNSAT	6.54	27.3	8.84	13.2	1.79	17.2	-
2025 Metaroom 2023	33	UNSAT	6.83	28.3	11.5	13.8	-	16.8	-
2025 Metaroom 2023	34	UNSAT	6.57	27.3	8.85	12.0	1.82	17.2	-
2025 Metaroom 2023	35	SAT	6.79	7.26	8.57	13.5	3.45	-	-
2025 Metaroom 2023	36	UNSAT	6.55	27.3	8.74	13.2	-	15.9	-
2025 Metaroom 2023	37	UNSAT	6.93	27.9	12.2	13.8	2.65	18.7	-
2025 Metaroom 2023	38	UNSAT	6.94	27.8	12.2	13.7	2.64	18.2	-
2025 Metaroom 2023	39	UNSAT	6.84	28.2	11.4	13.8	-	16.6	-
2025 Metaroom 2023	40	UNSAT	6.79	27.8	11.5	13.8	-	16.6	-
2025 Metaroom 2023	41	UNSAT	6.94	27.8	12.6	13.7	2.63	18.4	-
2025 Metaroom 2023	42	UNSAT	6.47	27.3	8.74	13.0	-	15.9	-
2025 Metaroom 2023	43	UNSAT	6.53	27.2	8.87	13.0	1.85	17.2	-
2025 Metaroom 2023	44	UNSAT	6.67	27.3	8.89	13.0	1.99	17.4	-
2025 Metaroom 2023	45	SAT	7.03	7.82	9.16	14.1	-	16.8	-
2025 Metaroom 2023	46	UNSAT	6.82	28.0	11.5	13.8	-	16.7	-
2025 Metaroom 2023	47	UNSAT	6.86	27.9	11.6	13.8	-	16.7	-
2025 Metaroom 2023	48	UNSAT	6.85	27.8	11.4	13.8	-	16.7	-
2025 Metaroom 2023	49	UNSAT	6.94	28.6	12.8	13.7	2.63	18.4	-
2025 Metaroom 2023	50	UNSAT	6.88	28.2	12.8	13.7	2.60	18.6	-
2025 Metaroom 2023	51	UNSAT	6.52	27.3	8.88	13.2	1.84	17.4	-
2025 Metaroom 2023	52	UNSAT	6.95	27.9	12.9	13.8	2.55	18.7	-
2025 Metaroom 2023	53	UNSAT	6.94	28.4	12.2	13.8	2.63	18.3	-
2025 Metaroom 2023	54	UNSAT	6.86	27.7	11.5	12.7	-	16.7	-
2025 Metaroom 2023	55	UNSAT	6.66	27.3	8.88	13.0	1.91	17.3	-
2025 Metaroom 2023	56	UNSAT	6.81	27.9	11.5	13.7	-	16.8	-
2025 Metaroom 2023	57	UNSAT	6.64	27.3	8.86	13.0	1.94	17.9	-
2025 Metaroom 2023	58	UNSAT	6.56	27.3	8.72	13.2	-	16.0	-
2025 Metaroom 2023	59	UNSAT	6.83	28.3	11.5	13.7	-	16.5	-
2025 Metaroom 2023	60	UNSAT	6.80	27.6	11.4	13.7	-	16.7	-
2025 Metaroom 2023	61	UNSAT	6.62	27.3	8.79	13.0	1.81	17.4	-
2025 Metaroom 2023	62	UNSAT	6.58	27.3	8.75	13.2	-	16.1	-
2025 Metaroom 2023	63	UNSAT	6.99	28.4	11.6	13.8	2.65	18.4	-
2025 Metaroom 2023	64	UNSAT	6.89	28.1	11.8	13.7	2.69	18.2	-
2025 Metaroom 2023	65	UNSAT	6.96	29.4	12.6	13.7	2.53	18.8	-
2025 Metaroom 2023	66	UNSAT	6.95	27.8	12.9	13.7	2.70	19.1	-
2025 Metaroom 2023	67	UNSAT	6.92	27.6	11.5	13.7	-	16.9	-
2025 Metaroom 2023	68	UNSAT	6.78	29.0	11.6	13.7	-	16.6	-
2025 Metaroom 2023	69	UNSAT	6.57	27.3	8.73	13.0	-	15.8	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Metaroom 2023	70	UNSAT	7.08	28.0	12.4	13.7	2.63	18.5	-
2025 Metaroom 2023	71	UNSAT	6.65	27.3	8.82	13.0	1.81	17.2	-
2025 Metaroom 2023	72	UNSAT	6.58	27.3	8.78	13.3	-	15.9	-
2025 Metaroom 2023	73	UNSAT	6.66	27.3	8.82	13.1	1.81	17.1	-
2025 Metaroom 2023	74	UNSAT	6.85	27.7	11.4	13.7	-	16.7	-
2025 Metaroom 2023	75	UNSAT	6.92	27.9	13.1	13.7	3.54	20.3	-
2025 Metaroom 2023	76	UNSAT	6.57	27.3	8.76	13.2	-	15.8	-
2025 Metaroom 2023	77	UNSAT	6.59	27.2	8.78	13.0	-	16.0	-
2025 Metaroom 2023	78	UNSAT	10.00	110	10.6	-	48.2	-	-
2025 Metaroom 2023	79	UNSAT	6.93	28.0	12.9	13.7	3.99	21.1	-
2025 Metaroom 2023	80	UNSAT	6.55	27.2	8.74	12.0	-	16.1	-
2025 Metaroom 2023	81	UNSAT	6.52	27.3	8.74	13.0	-	15.9	-
2025 Metaroom 2023	82	UNSAT	6.63	27.2	8.79	13.0	1.83	17.2	-
2025 Metaroom 2023	83	UNSAT	6.97	28.0	12.4	13.7	2.63	18.6	-
2025 Metaroom 2023	84	UNSAT	6.91	27.8	12.6	13.7	2.60	18.2	-
2025 Metaroom 2023	85	UNSAT	6.57	27.3	8.73	13.0	-	15.7	-
2025 Metaroom 2023	86	UNSAT	6.85	27.8	11.3	13.8	-	17.1	-
2025 Metaroom 2023	87	UNSAT	6.97	27.7	12.7	12.7	2.65	18.7	-
2025 Metaroom 2023	88	UNSAT	6.91	27.7	12.9	13.7	2.69	19.3	-
2025 Metaroom 2023	89	UNSAT	6.52	27.3	8.77	13.0	-	15.9	-
2025 Metaroom 2023	90	UNSAT	6.92	27.6	12.9	13.7	2.72	19.0	-
2025 Metaroom 2023	91	UNSAT	6.86	27.7	11.5	13.8	-	16.6	-
2025 Metaroom 2023	92	UNSAT	6.85	28.3	11.5	13.7	-	16.9	-
2025 Metaroom 2023	93	UNSAT	6.91	27.8	12.3	12.7	2.72	18.1	-
2025 Metaroom 2023	94	UNSAT	6.94	27.6	12.9	13.7	2.75	18.8	-
2025 Metaroom 2023	95	SAT	7.04	7.28	9.08	14.1	-	16.8	-
2025 Metaroom 2023	96	UNSAT	6.92	27.7	12.7	13.7	2.64	19.0	-
2025 Metaroom 2023	97	UNSAT	-	-	13.2	-	-	-	-
2025 Metaroom 2023	98	UNSAT	6.59	27.3	8.67	12.9	-	16.0	-
2025 Metaroom 2023	99	UNSAT	6.82	27.8	11.5	13.7	-	16.5	-
2025 Nn4sys	0	UNSAT	6.62	9.81	6.07	-	-	-	18.3
2025 Nn4sys	1	UNSAT	7.50	11.8	-	-	-	-	24.1
2025 Nn4sys	2	UNSAT	6.60	9.82	6.09	-	-	-	17.4
2025 Nn4sys	3	UNSAT	6.62	9.79	6.12	-	-	-	17.3
2025 Nn4sys	4	UNSAT	7.11	10.9	-	-	-	-	21.0
2025 Nn4sys	5	UNSAT	6.66	9.91	6.08	-	-	-	17.2
2025 Nn4sys	6	UNSAT	6.78	10.2	6.20	-	-	-	17.5
2025 Nn4sys	7	UNSAT	6.79	10.3	6.17	-	-	-	17.6
2025 Nn4sys	8	UNSAT	7.47	11.6	-	-	-	-	22.0
2025 Nn4sys	9	UNSAT	7.17	10.9	-	-	-	-	21.1
2025 Nn4sys	10	UNSAT	6.83	10.4	6.16	-	-	-	17.5
2025 Nn4sys	11	UNSAT	6.78	10.2	6.12	-	-	-	17.5
2025 Nn4sys	12	UNSAT	6.80	10.3	6.13	-	-	-	17.5
2025 Nn4sys	13	UNSAT	6.65	9.78	6.07	-	-	-	17.3
2025 Nn4sys	14	UNSAT	6.82	10.2	6.17	-	-	-	17.6
2025 Nn4sys	15	UNSAT	6.63	9.80	6.12	-	-	-	17.3
2025 Nn4sys	16	UNSAT	6.59	9.85	6.11	-	-	-	17.4
2025 Nn4sys	17	UNSAT	7.10	10.9	-	-	-	-	21.0
2025 Nn4sys	18	UNSAT	6.65	9.82	6.11	-	-	-	17.3
2025 Nn4sys	19	UNSAT	7.17	10.8	-	-	-	-	21.0
2025 Nn4sys	20	UNSAT	7.12	10.9	-	-	-	-	20.9
2025 Nn4sys	21	UNSAT	6.76	10.2	6.12	-	-	-	17.5
2025 Nn4sys	22	UNSAT	6.78	10.3	6.17	-	-	-	17.6
2025 Nn4sys	23	UNSAT	7.47	11.8	-	-	-	-	22.1
2025 Nn4sys	24	UNSAT	7.47	11.9	-	-	-	-	22.1
2025 Nn4sys	25	UNSAT	6.78	10.3	6.16	-	-	-	17.6
2025 Nn4sys	26	UNSAT	6.85	10.3	6.15	-	-	-	17.5
2025 Nn4sys	27	UNSAT	7.11	10.9	-	-	-	-	21.0
2025 Nn4sys	28	UNSAT	6.62	9.91	6.06	-	-	-	17.3
2025 Nn4sys	29	UNSAT	6.77	10.3	6.16	-	-	-	17.5
2025 Nn4sys	30	UNSAT	7.47	11.6	-	-	-	-	21.9
2025 Nn4sys	31	UNSAT	6.77	10.3	6.14	-	-	-	17.5
2025 Nn4sys	32	UNSAT	7.08	10.9	-	-	-	-	21.0
2025 Nn4sys	33	UNSAT	7.13	10.8	-	-	-	-	21.0
2025 Nn4sys	34	UNSAT	6.60	9.80	6.09	-	-	-	17.4
2025 Nn4sys	35	UNSAT	10.7	-	-	-	-	-	22.2
2025 Nn4sys	36	UNSAT	10.8	-	-	-	-	-	22.1
2025 Nn4sys	37	UNSAT	10.8	-	-	-	-	-	22.0

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Nn4sys	38	UNSAT 10.4	-	-	-	-	-	22.1
2025 Nn4sys	39	UNSAT 11.1	-	-	-	-	-	22.1
2025 Nn4sys	40	UNSAT 10.7	-	-	-	-	-	22.0
2025 Nn4sys	41	UNSAT 10.8	-	-	-	-	-	22.2
2025 Nn4sys	42	UNSAT 10.4	-	-	-	-	-	21.9
2025 Nn4sys	43	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	44	UNSAT 10.5	-	-	-	-	-	22.0
2025 Nn4sys	45	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	46	UNSAT 10.4	-	-	-	-	-	22.1
2025 Nn4sys	47	UNSAT 10.5	-	-	-	-	-	22.0
2025 Nn4sys	48	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	49	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	50	UNSAT 10.2	-	-	-	-	-	22.1
2025 Nn4sys	51	UNSAT 10.7	-	-	-	-	-	22.0
2025 Nn4sys	52	UNSAT 10.00	-	-	-	-	-	22.1
2025 Nn4sys	53	UNSAT 10.4	-	-	-	-	-	22.1
2025 Nn4sys	54	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	55	UNSAT 11.2	-	-	-	-	-	22.0
2025 Nn4sys	56	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	57	UNSAT 10.7	-	-	-	-	-	22.0
2025 Nn4sys	58	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	59	UNSAT 10.7	-	-	-	-	-	22.0
2025 Nn4sys	60	UNSAT 10.8	-	-	-	-	-	21.9
2025 Nn4sys	61	UNSAT 10.7	-	-	-	-	-	21.9
2025 Nn4sys	62	UNSAT 10.7	-	-	-	-	-	22.1
2025 Nn4sys	63	UNSAT 10.7	-	-	-	-	-	22.1
2025 Nn4sys	64	UNSAT 10.5	-	-	-	-	-	22.0
2025 Nn4sys	65	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	66	UNSAT 10.4	-	-	-	-	-	22.0
2025 Nn4sys	67	UNSAT 10.4	-	-	-	-	-	21.9
2025 Nn4sys	68	UNSAT 10.8	-	-	-	-	-	22.1
2025 Nn4sys	69	UNSAT 10.7	-	-	-	-	-	22.2
2025 Nn4sys	70	UNSAT 11.1	-	-	-	-	-	21.8
2025 Nn4sys	71	UNSAT 11.0	-	-	-	-	108	22.2
2025 Nn4sys	72	UNSAT 11.0	-	-	-	-	88.3	21.9
2025 Nn4sys	73	UNSAT 10.7	-	-	-	-	-	22.0
2025 Nn4sys	74	UNSAT 10.8	-	-	-	-	-	22.0
2025 Nn4sys	75	UNSAT 11.3	-	-	-	-	90.3	22.1
2025 Nn4sys	76	UNSAT 11.1	-	-	-	-	-	22.1
2025 Nn4sys	77	UNSAT 10.7	-	-	-	-	-	22.1
2025 Nn4sys	78	UNSAT 11.1	-	-	-	-	-	22.0
2025 Nn4sys	79	UNSAT 11.7	-	-	-	-	87.7	22.0
2025 Nn4sys	80	UNSAT 10.7	-	-	-	-	-	22.1
2025 Nn4sys	81	UNSAT 11.1	-	-	-	-	88.7	22.0
2025 Nn4sys	82	UNSAT 11.0	-	-	-	-	-	22.0
2025 Nn4sys	83	UNSAT 11.7	-	-	-	-	90.0	21.9
2025 Nn4sys	84	UNSAT 11.0	-	-	-	-	-	22.1
2025 Nn4sys	85	UNSAT 10.7	-	-	-	-	94.5	21.9
2025 Nn4sys	86	UNSAT 11.0	-	-	-	-	88.6	21.9
2025 Nn4sys	87	UNSAT 10.9	-	-	-	-	87.2	22.0
2025 Nn4sys	88	UNSAT 11.4	-	-	-	-	-	22.2
2025 Nn4sys	89	UNSAT 11.0	-	-	-	-	-	22.2
2025 Nn4sys	90	UNSAT 11.3	-	-	-	-	91.8	22.0
2025 Nn4sys	91	UNSAT 11.0	-	-	-	-	-	22.1
2025 Nn4sys	92	UNSAT 11.0	-	-	-	-	90.1	22.1
2025 Nn4sys	93	UNSAT 11.0	-	-	-	-	89.9	22.2
2025 Nn4sys	94	UNSAT 10.7	-	-	-	-	90.7	22.1
2025 Nn4sys	95	UNSAT 11.1	-	-	-	-	-	22.1
2025 Nn4sys	96	UNSAT 11.0	-	-	-	-	-	22.0
2025 Nn4sys	97	UNSAT 10.7	-	-	-	-	98.5	22.1
2025 Nn4sys	98	UNSAT 10.7	-	-	-	-	-	22.1
2025 Nn4sys	99	UNSAT 11.1	-	-	-	-	-	22.1
2025 Nn4sys	100	UNSAT 11.0	-	-	-	-	102	22.0
2025 Nn4sys	101	UNSAT 11.3	-	-	-	-	-	22.0
2025 Nn4sys	102	UNSAT 11.3	-	-	-	-	-	22.0
2025 Nn4sys	103	UNSAT 10.9	-	-	-	-	103	22.1
2025 Nn4sys	104	UNSAT 10.7	-	-	-	-	95.3	22.1
2025 Nn4sys	105	UNSAT 6.27	9.33	6.33	-	0.90	-	2.81

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Nn4sys	106	UNSAT	6.37	9.37	6.39	-	0.90	-	2.83
2025 Nn4sys	107	UNSAT	6.31	9.39	17.9	-	1.29	-	-
2025 Nn4sys	108	UNSAT	6.38	9.55	21.4	-	1.32	-	-
2025 Nn4sys	109	UNSAT	6.32	9.87	28.2	-	1.82	-	-
2025 Nn4sys	110	UNSAT	6.37	9.90	35.6	-	1.74	-	-
2025 Nn4sys	111	UNSAT	6.38	10.2	30.6	-	2.02	-	-
2025 Nn4sys	112	UNSAT	6.39	10.3	46.4	-	2.14	-	-
2025 Nn4sys	113	UNSAT	6.32	10.5	45.2	-	2.39	-	-
2025 Nn4sys	114	UNSAT	6.39	10.6	58.2	-	2.63	-	-
2025 Nn4sys	115	UNSAT	6.37	10.8	58.0	-	2.84	-	-
2025 Nn4sys	116	UNSAT	6.43	10.9	61.9	-	3.03	-	-
2025 Nn4sys	117	UNSAT	6.40	14.7	85.8	-	6.52	-	-
2025 Nn4sys	118	UNSAT	6.42	14.7	-	-	7.21	-	-
2025 Nn4sys	119	UNSAT	6.39	19.2	82.2	-	10.3	-	-
2025 Nn4sys	120	UNSAT	6.43	19.4	-	-	11.2	-	-
2025 Nn4sys	121	UNSAT	6.64	24.5	-	-	13.9	-	-
2025 Nn4sys	122	UNSAT	6.67	24.9	-	-	15.5	-	-
2025 Nn4sys	123	UNSAT	6.61	30.4	-	-	17.7	-	-
2025 Nn4sys	124	UNSAT	6.63	30.3	-	-	19.5	-	-
2025 Nn4sys	125	UNSAT	6.64	33.2	-	-	19.6	-	-
2025 Nn4sys	126	UNSAT	6.65	33.3	-	-	21.4	-	-
2025 Nn4sys	127	UNSAT	8.09	-	-	-	-	-	-
2025 Nn4sys	128	UNSAT	8.10	-	-	-	-	-	-
2025 Nn4sys	129	UNSAT	7.33	10.1	6.44	-	-	-	-
2025 Nn4sys	130	UNSAT	7.47	12.4	51.3	-	-	-	-
2025 Nn4sys	131	UNSAT	7.49	15.0	-	-	-	-	-
2025 Nn4sys	132	UNSAT	7.42	16.2	-	-	-	-	-
2025 Nn4sys	133	UNSAT	7.71	26.2	-	-	-	-	-
2025 Nn4sys	134	UNSAT	7.69	31.5	-	-	-	-	-
2025 Nn4sys	135	UNSAT	7.76	29.4	-	-	-	-	-
2025 Nn4sys	136	UNSAT	7.90	32.5	-	-	-	-	-
2025 Nn4sys	137	UNSAT	7.70	10.6	7.37	-	-	-	-
2025 Nn4sys	138	UNSAT	8.36	17.3	-	-	-	-	-
2025 Nn4sys	139	UNSAT	8.39	15.1	-	-	-	-	-
2025 Nn4sys	140	UNSAT	8.73	15.5	-	-	-	-	-
2025 Nn4sys	141	UNSAT	8.70	16.0	-	-	-	-	-
2025 Nn4sys	142	UNSAT	8.74	18.0	-	-	-	-	-
2025 Nn4sys	143	UNSAT	8.77	18.9	-	-	-	-	-
2025 Nn4sys	144	UNSAT	8.86	19.5	-	-	-	-	-
2025 Nn4sys	145	UNSAT	9.27	32.6	-	-	-	-	-
2025 Nn4sys	146	UNSAT	9.62	35.6	-	-	-	-	-
2025 Nn4sys	147	UNSAT	9.94	42.5	-	-	-	-	-
2025 Nn4sys	148	UNSAT	10.1	49.9	-	-	-	-	-
2025 Nn4sys	149	UNSAT	10.1	52.8	-	-	-	-	-
2025 Nn4sys	150	UNSAT	10.3	57.6	-	-	-	-	-
2025 Nn4sys	151	UNSAT	10.5	63.2	-	-	-	-	-
2025 Nn4sys	152	UNSAT	10.9	66.8	-	-	-	-	-
2025 Nn4sys	153	UNSAT	11.1	72.8	-	-	-	-	-
2025 Nn4sys	154	UNSAT	11.4	78.6	-	-	-	-	-
2025 Nn4sys	155	UNSAT	11.7	82.8	-	-	-	-	-
2025 Nn4sys	156	UNSAT	11.9	87.8	-	-	-	-	-
2025 Nn4sys	157	UNSAT	21.7	92.0	-	-	-	-	-
2025 Nn4sys	158	UNSAT	22.9	97.8	-	-	-	-	-
2025 Nn4sys	159	UNSAT	23.4	105	-	-	-	-	-
2025 Nn4sys	160	UNSAT	8.88	13.0	16.1	-	-	-	-
2025 Nn4sys	161	UNSAT	9.50	-	-	-	-	-	-
2025 Nn4sys	162	UNSAT	10.4	20.3	-	-	-	-	-
2025 Nn4sys	163	UNSAT	10.8	22.2	-	-	-	-	-
2025 Nn4sys	164	UNSAT	12.7	28.8	-	-	-	-	-
2025 Nn4sys	165	UNSAT	13.6	33.8	-	-	-	-	-
2025 Nn4sys	166	UNSAT	14.4	38.5	-	-	-	-	-
2025 Nn4sys	167	UNSAT	15.8	45.1	-	-	-	-	-
2025 Nn4sys	168	UNSAT	16.5	49.5	-	-	-	-	-
2025 Nn4sys	169	UNSAT	17.5	53.9	-	-	-	-	-
2025 Nn4sys	170	UNSAT	18.7	60.4	-	-	-	-	-
2025 Nn4sys	171	UNSAT	10.1	20.1	-	-	-	-	-
2025 Nn4sys	172	UNSAT	11.7	30.4	-	-	-	-	-
2025 Nn4sys	173	UNSAT	12.9	35.7	-	-	-	-	-

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Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Nn4sys	174	UNSAT	13.1	37.0	-	-	-	-	-
2025 Nn4sys	175	UNSAT	13.3	38.3	-	-	-	-	-
2025 Nn4sys	176	UNSAT	15.9	48.0	-	-	-	-	-
2025 Nn4sys	177	UNSAT	15.5	48.0	-	-	-	-	-
2025 Nn4sys	178	UNSAT	17.1	50.6	-	-	-	-	-
2025 Nn4sys	179	UNSAT	23.4	60.7	-	-	-	-	-
2025 Nn4sys	180	UNSAT	29.2	70.6	-	-	-	-	-
2025 Nn4sys	181	UNSAT	36.4	97.9	-	-	-	-	-
2025 Nn4sys	182	UNSAT	36.3	99.4	-	-	-	-	-
2025 Nn4sys	183	UNSAT	42.1	112	-	-	-	-	-
2025 Nn4sys	184	UNSAT	48.5	129	-	-	-	-	-
2025 Nn4sys	185	UNSAT	48.7	140	-	-	-	-	-
2025 Nn4sys	186	UNSAT	56.1	159	-	-	-	-	-
2025 Nn4sys	187	UNSAT	57.9	167	-	-	-	-	-
2025 Nn4sys	188	UNSAT	65.4	184	-	-	-	-	-
2025 Nn4sys	189	UNSAT	67.4	-	-	-	-	-	-
2025 Nn4sys	190	UNSAT	70.3	201	-	-	-	-	-
2025 Nn4sys	191	UNSAT	80.1	217	-	-	-	-	-
2025 Nn4sys	192	UNSAT	80.5	236	-	-	-	-	-
2025 Nn4sys	193	UNSAT	78.5	249	-	-	-	-	-
2025 Safenlp 2024	0	SAT	6.64	8.99	6.12	12.2	1.23	-	✗
2025 Safenlp 2024	1	UNSAT	8.26	10.4	-	-	-	-	17.9
2025 Safenlp 2024	2	SAT	6.87	8.91	6.17	12.2	1.24	-	✗
2025 Safenlp 2024	3	SAT	6.86	-	6.11	14.3	-	-	✗
2025 Safenlp 2024	4	UNSAT	6.27	7.94	6.37	11.9	1.07	17.0	19.0
2025 Safenlp 2024	5	SAT	6.80	8.21	6.10	12.2	1.30	-	✗
2025 Safenlp 2024	6	SAT	6.77	8.14	6.08	12.2	1.25	-	-
2025 Safenlp 2024	7	UNSAT	7.61	8.55	-	-	-	-	-
2025 Safenlp 2024	8	UNSAT	6.32	7.94	6.34	12.0	1.07	16.8	18.0
2025 Safenlp 2024	9	UNSAT	7.29	8.01	9.81	13.3	2.00	-	17.9
2025 Safenlp 2024	10	UNSAT	7.02	8.02	7.17	12.7	2.01	-	17.8
2025 Safenlp 2024	11	UNSAT	7.33	8.03	6.86	12.9	1.60	-	17.8
2025 Safenlp 2024	12	SAT	6.59	8.05	6.13	12.2	1.30	-	✗
2025 Safenlp 2024	13	SAT	6.71	6.00	6.14	11.2	1.29	-	18.1
2025 Safenlp 2024	14	SAT	6.81	8.92	6.12	12.2	1.26	-	✗
2025 Safenlp 2024	15	SAT	6.79	6.27	6.12	11.2	1.24	-	18.0
2025 Safenlp 2024	16	UNSAT	6.32	7.91	6.40	12.0	1.13	16.8	17.6
2025 Safenlp 2024	17	SAT	6.51	7.99	6.12	21.0	1.53	-	✗
2025 Safenlp 2024	18	UNSAT	7.14	8.01	11.7	13.5	2.43	-	17.9
2025 Safenlp 2024	19	SAT	6.63	9.12	6.10	12.2	1.24	-	✗
2025 Safenlp 2024	20	SAT	6.87	5.90	6.04	12.2	1.23	14.9	17.9
2025 Safenlp 2024	21	UNSAT	8.35	9.00	-	-	-	-	17.9
2025 Safenlp 2024	22	UNSAT	6.32	7.91	6.40	10.9	1.07	16.6	17.8
2025 Safenlp 2024	23	SAT	6.71	5.98	6.07	12.2	1.23	15.0	18.0
2025 Safenlp 2024	24	SAT	6.82	6.01	6.11	12.2	1.24	14.9	18.1
2025 Safenlp 2024	25	UNSAT	7.14	8.29	15.2	13.8	3.67	-	-
2025 Safenlp 2024	26	UNSAT	6.32	7.88	6.38	11.9	1.13	16.3	17.7
2025 Safenlp 2024	27	SAT	6.83	8.97	6.11	12.3	1.24	-	-
2025 Safenlp 2024	28	UNSAT	7.18	8.02	14.6	13.6	3.33	-	17.9
2025 Safenlp 2024	29	SAT	6.79	5.97	6.05	11.1	1.26	15.2	18.2
2025 Safenlp 2024	30	SAT	6.51	5.99	6.12	11.2	1.25	14.9	18.1
2025 Safenlp 2024	31	SAT	6.72	8.97	6.13	12.2	1.26	-	✗
2025 Safenlp 2024	32	UNSAT	7.08	8.00	8.61	13.5	1.93	-	17.7
2025 Safenlp 2024	33	UNSAT	6.39	7.99	6.46	11.7	1.07	17.0	18.1
2025 Safenlp 2024	34	SAT	6.79	9.03	6.11	12.2	1.23	-	✗
2025 Safenlp 2024	35	SAT	6.62	7.93	6.10	11.2	1.24	-	✗
2025 Safenlp 2024	36	SAT	6.89	8.09	6.10	13.0	1.23	-	✗
2025 Safenlp 2024	37	UNSAT	6.34	7.89	6.39	12.0	1.07	16.5	17.6
2025 Safenlp 2024	38	SAT	7.04	8.00	6.11	12.2	1.24	-	✗
2025 Safenlp 2024	39	SAT	6.57	8.05	6.12	12.7	1.47	-	✗
2025 Safenlp 2024	40	SAT	6.71	8.01	6.12	12.7	1.26	-	✗
2025 Safenlp 2024	41	SAT	6.68	8.06	6.12	11.4	1.24	-	✗
2025 Safenlp 2024	42	UNSAT	7.05	7.96	6.62	12.7	1.27	-	17.9
2025 Safenlp 2024	43	UNSAT	7.17	8.19	12.4	15.8	2.73	-	17.8
2025 Safenlp 2024	44	UNSAT	8.30	8.86	-	-	-	-	17.9
2025 Safenlp 2024	45	UNSAT	7.19	8.04	8.26	13.2	2.22	-	17.9
2025 Safenlp 2024	46	SAT	6.69	8.12	6.11	12.8	1.43	-	✗
2025 Safenlp 2024	47	SAT	6.69	8.96	6.10	12.2	1.24	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	48	UNSAT	6.33	7.90	6.42	10.9	1.10	16.4	17.5
2025 Safenlp 2024	49	SAT	6.74	8.98	6.06	12.7	1.23	-	✗
2025 Safenlp 2024	50	SAT	6.72	8.88	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	51	SAT	6.78	6.05	6.08	11.2	1.24	15.6	18.1
2025 Safenlp 2024	52	SAT	6.76	7.95	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	53	SAT	6.58	8.95	6.10	12.2	1.27	-	✗
2025 Safenlp 2024	54	UNSAT	7.15	8.19	17.6	-	20.8	-	17.9
2025 Safenlp 2024	55	UNSAT	6.27	7.93	6.38	11.9	1.07	16.4	17.8
2025 Safenlp 2024	56	SAT	6.86	8.06	6.11	12.2	1.29	-	✗
2025 Safenlp 2024	57	SAT	6.79	8.90	6.08	13.5	1.78	-	✗
2025 Safenlp 2024	58	UNSAT	7.41	8.32	-	17.3	-	-	18.0
2025 Safenlp 2024	59	UNSAT	11.7	26.7	-	-	-	-	-
2025 Safenlp 2024	60	UNSAT	7.35	8.01	9.04	13.3	2.03	-	17.7
2025 Safenlp 2024	61	SAT	6.84	5.96	6.07	12.3	1.24	15.1	-
2025 Safenlp 2024	62	UNSAT	7.25	8.24	14.5	15.5	2.71	-	18.0
2025 Safenlp 2024	63	UNSAT	7.20	8.04	6.75	12.8	1.47	-	17.8
2025 Safenlp 2024	64	SAT	6.73	8.00	6.10	12.2	1.27	-	✗
2025 Safenlp 2024	65	SAT	6.85	8.99	6.07	11.2	1.23	-	✗
2025 Safenlp 2024	66	SAT	6.85	6.34	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	67	SAT	6.80	8.95	6.09	12.3	1.24	-	✗
2025 Safenlp 2024	68	SAT	6.57	8.00	6.11	12.3	1.22	-	✗
2025 Safenlp 2024	69	SAT	6.72	8.03	6.11	12.3	1.25	-	✗
2025 Safenlp 2024	70	SAT	6.82	6.11	6.07	12.2	1.24	-	18.1
2025 Safenlp 2024	71	SAT	6.64	5.97	6.06	12.2	1.22	15.1	18.0
2025 Safenlp 2024	72	SAT	6.89	7.99	6.13	12.3	1.25	-	✗
2025 Safenlp 2024	73	SAT	6.78	7.91	6.11	12.1	1.23	-	✗
2025 Safenlp 2024	74	UNSAT	6.32	7.97	6.36	11.9	1.07	16.7	17.6
2025 Safenlp 2024	75	UNSAT	8.80	43.0	-	-	-	-	17.7
2025 Safenlp 2024	76	SAT	6.86	6.47	6.12	12.2	1.23	-	✗
2025 Safenlp 2024	77	SAT	6.82	7.70	6.11	11.2	1.25	-	18.1
2025 Safenlp 2024	78	SAT	6.77	7.97	6.07	11.2	1.23	-	✗
2025 Safenlp 2024	79	SAT	6.80	9.00	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	80	SAT	6.67	5.95	6.06	11.2	1.26	14.9	17.8
2025 Safenlp 2024	81	SAT	6.72	8.94	6.13	11.2	1.23	-	✗
2025 Safenlp 2024	82	UNSAT	6.32	7.97	6.38	12.0	1.08	16.7	17.8
2025 Safenlp 2024	83	SAT	6.83	8.93	6.10	13.0	1.24	-	✗
2025 Safenlp 2024	84	SAT	6.64	5.97	6.10	12.2	1.29	15.1	18.0
2025 Safenlp 2024	85	SAT	6.88	7.93	6.12	12.2	1.28	-	✗
2025 Safenlp 2024	86	SAT	6.80	8.94	6.14	13.0	1.44	-	✗
2025 Safenlp 2024	87	UNSAT	6.35	8.00	6.36	11.9	1.07	16.7	17.8
2025 Safenlp 2024	88	UNSAT	6.40	8.02	6.46	11.5	1.08	16.8	17.7
2025 Safenlp 2024	89	SAT	6.80	5.95	6.06	12.2	1.28	14.8	18.1
2025 Safenlp 2024	90	SAT	6.67	7.92	6.12	13.3	1.76	-	-
2025 Safenlp 2024	91	SAT	6.84	5.94	6.06	12.1	1.26	15.0	18.2
2025 Safenlp 2024	92	SAT	6.67	5.97	6.08	12.2	1.23	14.9	17.9
2025 Safenlp 2024	93	UNSAT	7.26	8.95	-	20.0	-	-	18.0
2025 Safenlp 2024	94	UNSAT	6.31	7.93	6.39	10.9	1.07	16.3	17.6
2025 Safenlp 2024	95	UNSAT	8.10	20.6	-	-	-	-	17.8
2025 Safenlp 2024	96	SAT	6.70	8.93	6.08	11.2	1.23	-	✗
2025 Safenlp 2024	97	SAT	6.85	9.66	6.09	13.2	1.73	-	✗
2025 Safenlp 2024	98	SAT	6.76	8.00	6.11	12.2	1.25	-	✗
2025 Safenlp 2024	99	UNSAT	6.32	7.94	6.37	12.0	1.07	16.2	17.8
2025 Safenlp 2024	100	SAT	6.74	5.98	6.05	12.2	1.07	14.9	17.9
2025 Safenlp 2024	101	UNSAT	6.29	7.93	6.36	12.0	1.09	16.3	17.6
2025 Safenlp 2024	102	SAT	6.53	6.01	6.07	12.2	1.27	15.1	17.9
2025 Safenlp 2024	103	SAT	6.55	6.05	6.08	12.2	1.23	14.8	17.8
2025 Safenlp 2024	104	SAT	6.76	7.99	6.13	12.3	1.22	-	✗
2025 Safenlp 2024	105	SAT	6.82	8.96	6.13	11.2	1.28	-	✗
2025 Safenlp 2024	106	UNSAT	6.33	7.94	6.41	11.9	1.13	16.3	17.7
2025 Safenlp 2024	107	UNSAT	7.44	8.12	12.5	14.7	2.85	-	17.8
2025 Safenlp 2024	108	SAT	6.85	9.00	6.12	13.0	1.24	-	✗
2025 Safenlp 2024	109	SAT	6.86	7.96	6.09	12.2	1.29	-	✗
2025 Safenlp 2024	110	SAT	6.66	8.92	6.13	12.0	1.48	-	✗
2025 Safenlp 2024	111	SAT	6.80	5.90	6.07	12.2	1.24	14.9	17.8
2025 Safenlp 2024	112	UNSAT	6.30	7.99	6.38	11.9	1.07	16.5	17.6
2025 Safenlp 2024	113	SAT	6.80	5.93	6.10	12.2	1.24	14.9	18.0
2025 Safenlp 2024	114	SAT	6.55	8.95	6.10	12.3	1.23	-	✗
2025 Safenlp 2024	115	SAT	6.81	5.91	6.04	12.3	1.24	15.3	17.9

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	116	UNSAT	7.26	8.02	8.80	13.1	2.25	-	-
2025 Safenlp 2024	117	UNSAT	6.28	7.92	6.38	11.9	1.07	16.6	17.6
2025 Safenlp 2024	118	SAT	6.82	5.95	6.06	12.2	1.25	15.0	17.8
2025 Safenlp 2024	119	UNSAT	6.33	7.96	6.40	11.9	1.07	16.8	17.8
2025 Safenlp 2024	120	SAT	6.80	7.97	6.12	11.2	1.25	-	✗
2025 Safenlp 2024	121	UNSAT	6.32	7.86	6.37	11.9	1.12	16.5	17.7
2025 Safenlp 2024	122	SAT	6.77	9.02	6.11	13.8	-	-	✗
2025 Safenlp 2024	123	SAT	6.49	5.94	6.10	12.1	1.09	14.9	17.9
2025 Safenlp 2024	124	SAT	6.80	5.97	6.04	12.2	1.25	14.8	18.3
2025 Safenlp 2024	125	UNSAT	7.21	8.25	-	-	12.6	-	17.7
2025 Safenlp 2024	126	UNSAT	7.10	8.04	15.2	14.3	5.54	-	17.9
2025 Safenlp 2024	127	UNSAT	8.84	17.2	-	-	-	-	18.1
2025 Safenlp 2024	128	SAT	6.82	9.02	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	129	SAT	6.61	5.95	6.06	12.2	1.23	14.9	17.9
2025 Safenlp 2024	130	SAT	6.86	8.96	6.12	12.2	1.23	-	✗
2025 Safenlp 2024	131	SAT	6.72	8.10	6.14	11.2	1.24	-	✗
2025 Safenlp 2024	132	SAT	6.86	6.08	6.09	12.2	1.24	14.9	18.2
2025 Safenlp 2024	133	SAT	6.87	6.00	6.05	12.2	1.06	14.8	-
2025 Safenlp 2024	134	UNSAT	6.32	7.92	6.39	12.0	1.08	16.1	-
2025 Safenlp 2024	135	SAT	6.78	8.00	6.12	12.3	1.28	-	✗
2025 Safenlp 2024	136	UNSAT	6.33	7.92	6.37	11.9	1.07	16.5	17.6
2025 Safenlp 2024	137	SAT	6.90	8.25	6.10	12.2	1.61	-	✗
2025 Safenlp 2024	138	UNSAT	6.26	7.87	6.39	11.9	1.12	16.6	17.7
2025 Safenlp 2024	139	SAT	6.83	5.98	6.04	12.2	1.24	14.9	18.0
2025 Safenlp 2024	140	SAT	6.68	6.75	6.08	11.2	1.25	15.2	18.0
2025 Safenlp 2024	141	UNSAT	7.33	8.27	-	15.8	14.4	-	18.1
2025 Safenlp 2024	142	UNSAT	7.40	8.13	10.8	14.3	2.12	-	17.8
2025 Safenlp 2024	143	SAT	6.84	5.96	6.10	12.2	1.08	15.0	17.7
2025 Safenlp 2024	144	UNSAT	6.31	7.87	6.35	11.0	1.14	16.4	17.7
2025 Safenlp 2024	145	SAT	6.77	5.91	6.07	11.2	1.24	15.0	18.3
2025 Safenlp 2024	146	UNSAT	6.29	7.94	6.41	12.0	1.09	16.5	17.7
2025 Safenlp 2024	147	SAT	6.78	8.04	6.13	12.2	1.23	-	✗
2025 Safenlp 2024	148	UNSAT	7.79	8.35	20.8	-	-	-	18.1
2025 Safenlp 2024	149	SAT	6.72	7.93	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	150	UNSAT	6.31	7.96	6.36	12.0	1.08	16.5	17.5
2025 Safenlp 2024	151	UNSAT	8.13	8.61	-	-	-	-	18.0
2025 Safenlp 2024	152	UNSAT	7.24	8.03	13.8	15.5	2.79	-	17.9
2025 Safenlp 2024	153	SAT	6.80	6.07	6.10	11.2	1.25	15.0	17.9
2025 Safenlp 2024	154	UNSAT	6.29	7.94	6.38	11.0	1.07	16.6	17.6
2025 Safenlp 2024	155	UNSAT	7.17	7.99	6.87	12.7	1.27	-	17.9
2025 Safenlp 2024	156	UNSAT	8.26	14.5	-	-	-	-	18.0
2025 Safenlp 2024	157	UNSAT	6.26	7.82	6.45	12.5	1.08	16.7	17.8
2025 Safenlp 2024	158	SAT	6.59	5.93	6.07	12.2	1.24	15.1	18.0
2025 Safenlp 2024	159	UNSAT	7.06	7.96	6.46	11.5	1.37	-	17.5
2025 Safenlp 2024	160	SAT	6.75	7.97	6.10	11.2	1.33	-	✗
2025 Safenlp 2024	161	SAT	6.66	8.97	6.11	12.2	1.27	-	✗
2025 Safenlp 2024	162	UNSAT	7.91	8.66	-	-	-	-	18.1
2025 Safenlp 2024	163	SAT	6.70	8.98	6.10	12.2	1.24	-	-
2025 Safenlp 2024	164	SAT	6.84	9.01	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	165	UNSAT	6.26	7.90	6.40	10.9	1.07	16.8	17.8
2025 Safenlp 2024	166	SAT	6.70	8.06	6.14	12.2	1.25	-	✗
2025 Safenlp 2024	167	SAT	6.50	8.89	6.14	12.3	1.25	-	✗
2025 Safenlp 2024	168	UNSAT	6.25	7.95	6.36	12.0	1.08	16.4	17.6
2025 Safenlp 2024	169	SAT	6.82	9.01	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	170	SAT	6.78	6.11	6.06	12.3	1.25	15.2	17.9
2025 Safenlp 2024	171	UNSAT	7.11	8.09	11.3	13.5	2.57	-	17.9
2025 Safenlp 2024	172	SAT	6.81	6.02	6.08	12.3	1.25	14.9	18.1
2025 Safenlp 2024	173	UNSAT	6.33	7.87	6.35	12.0	1.07	16.5	18.8
2025 Safenlp 2024	174	UNSAT	6.27	7.91	6.37	12.0	1.07	17.1	17.8
2025 Safenlp 2024	175	UNSAT	7.25	8.30	23.2	16.7	7.74	-	18.0
2025 Safenlp 2024	176	UNSAT	6.31	7.94	6.36	11.9	1.07	16.6	17.6
2025 Safenlp 2024	177	UNSAT	6.31	7.90	6.43	12.0	1.07	16.3	17.7
2025 Safenlp 2024	178	SAT	6.85	8.11	6.09	12.7	1.41	-	✗
2025 Safenlp 2024	179	UNSAT	7.33	8.02	6.62	11.7	1.61	-	17.9
2025 Safenlp 2024	180	UNSAT	7.18	8.21	15.8	25.3	14.9	-	18.1
2025 Safenlp 2024	181	SAT	6.69	8.02	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	182	UNSAT	6.32	7.94	6.38	12.0	1.07	16.6	17.7
2025 Safenlp 2024	183	SAT	6.55	7.97	6.15	12.2	1.21	-	✗

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	184	SAT	6.77	7.10	6.09	12.2	1.26	-	✗
2025 Safenlp 2024	185	UNSAT	7.04	8.09	19.6	14.3	4.95	-	17.8
2025 Safenlp 2024	186	UNSAT	6.28	7.86	6.35	12.0	1.07	16.7	17.9
2025 Safenlp 2024	187	SAT	6.75	7.56	6.12	12.2	1.24	15.0	18.1
2025 Safenlp 2024	188	UNSAT	6.39	7.94	6.48	12.5	1.07	16.5	19.0
2025 Safenlp 2024	189	SAT	6.80	7.98	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	190	UNSAT	7.58	9.89	-	-	-	-	17.9
2025 Safenlp 2024	191	UNSAT	6.25	7.87	6.35	12.0	1.07	17.1	17.8
2025 Safenlp 2024	192	SAT	6.83	8.07	6.13	12.5	1.43	-	✗
2025 Safenlp 2024	193	SAT	6.80	8.09	6.12	11.2	1.26	-	✗
2025 Safenlp 2024	194	UNSAT	6.23	7.88	6.45	12.5	1.07	16.8	17.6
2025 Safenlp 2024	195	SAT	6.77	5.97	6.12	12.2	1.24	15.0	18.2
2025 Safenlp 2024	196	UNSAT	7.01	8.01	7.12	13.3	1.44	-	17.9
2025 Safenlp 2024	197	SAT	6.82	8.97	6.13	12.2	1.27	-	✗
2025 Safenlp 2024	198	UNSAT	7.32	8.52	-	14.3	16.4	-	17.9
2025 Safenlp 2024	199	SAT	6.54	7.97	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	200	SAT	6.82	7.97	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	201	SAT	6.78	8.92	6.10	12.2	1.26	-	✗
2025 Safenlp 2024	202	SAT	6.67	8.94	6.12	12.2	1.25	-	✗
2025 Safenlp 2024	203	SAT	6.72	5.95	6.07	12.2	1.26	14.9	18.1
2025 Safenlp 2024	204	UNSAT	7.17	8.03	8.99	13.5	2.27	-	17.7
2025 Safenlp 2024	205	UNSAT	6.30	7.86	6.41	11.9	1.08	16.6	18.2
2025 Safenlp 2024	206	SAT	6.65	5.98	6.05	11.2	1.22	15.2	17.7
2025 Safenlp 2024	207	SAT	6.54	7.94	6.16	12.2	1.25	-	✗
2025 Safenlp 2024	208	UNSAT	6.26	7.93	6.40	12.0	1.07	16.7	17.9
2025 Safenlp 2024	209	SAT	6.76	7.32	6.14	12.2	1.30	14.9	18.3
2025 Safenlp 2024	210	SAT	6.60	9.01	6.11	11.2	1.23	-	✗
2025 Safenlp 2024	211	SAT	6.66	8.01	6.12	12.2	1.26	-	✗
2025 Safenlp 2024	212	SAT	6.83	8.99	6.13	12.2	1.27	-	✗
2025 Safenlp 2024	213	UNSAT	7.24	8.12	10.9	15.3	3.21	-	18.0
2025 Safenlp 2024	214	SAT	6.79	8.93	6.09	12.2	1.26	-	✗
2025 Safenlp 2024	215	SAT	6.62	7.92	6.13	11.2	1.27	-	✗
2025 Safenlp 2024	216	UNSAT	6.29	7.97	6.39	11.9	1.09	16.6	17.4
2025 Safenlp 2024	217	SAT	6.53	5.93	6.06	12.2	1.22	15.0	17.9
2025 Safenlp 2024	218	UNSAT	7.25	8.01	6.92	12.4	1.46	-	17.9
2025 Safenlp 2024	219	SAT	6.87	8.02	6.13	11.7	1.61	-	-
2025 Safenlp 2024	220	SAT	6.58	7.98	6.14	12.2	1.25	-	✗
2025 Safenlp 2024	221	SAT	6.82	6.27	6.13	12.2	1.23	-	18.1
2025 Safenlp 2024	222	SAT	6.80	9.07	6.13	12.2	1.28	-	✗
2025 Safenlp 2024	223	SAT	6.53	5.98	6.04	12.2	1.22	15.2	17.7
2025 Safenlp 2024	224	UNSAT	6.32	7.88	6.36	11.9	1.08	16.7	18.1
2025 Safenlp 2024	225	SAT	6.79	8.94	6.10	12.8	1.24	-	✗
2025 Safenlp 2024	226	SAT	6.62	7.93	6.13	11.2	1.23	-	✗
2025 Safenlp 2024	227	UNSAT	6.29	7.96	6.39	11.9	1.07	16.5	17.7
2025 Safenlp 2024	228	SAT	6.78	5.93	6.06	12.3	1.24	14.9	18.2
2025 Safenlp 2024	229	UNSAT	6.33	7.98	6.43	11.9	1.08	16.5	17.8
2025 Safenlp 2024	230	SAT	6.82	7.99	6.14	12.3	1.26	-	✗
2025 Safenlp 2024	231	SAT	6.48	5.97	6.06	12.2	1.12	14.8	17.9
2025 Safenlp 2024	232	UNSAT	7.44	8.24	14.5	14.3	3.21	-	17.7
2025 Safenlp 2024	233	SAT	6.68	8.12	6.10	12.2	1.47	-	✗
2025 Safenlp 2024	234	UNSAT	8.86	15.9	-	-	-	-	17.9
2025 Safenlp 2024	235	SAT	6.79	8.07	6.15	12.2	1.24	-	✗
2025 Safenlp 2024	236	UNSAT	8.43	9.40	-	-	-	-	18.3
2025 Safenlp 2024	237	UNSAT	6.26	7.96	6.40	12.1	1.10	17.2	17.8
2025 Safenlp 2024	238	SAT	6.59	9.27	6.14	12.5	1.44	-	✗
2025 Safenlp 2024	239	UNSAT	6.27	7.86	6.46	12.4	1.07	16.9	17.9
2025 Safenlp 2024	240	UNSAT	6.37	7.97	6.43	12.8	1.07	16.5	17.9
2025 Safenlp 2024	241	UNSAT	6.29	7.98	6.38	11.9	1.07	16.4	17.9
2025 Safenlp 2024	242	UNSAT	6.29	7.89	6.37	11.9	1.07	16.9	17.6
2025 Safenlp 2024	243	SAT	6.82	7.95	6.14	12.2	1.25	-	✗
2025 Safenlp 2024	244	UNSAT	7.23	8.25	-	13.2	6.24	-	17.7
2025 Safenlp 2024	245	UNSAT	6.27	7.91	6.42	11.9	1.13	16.4	18.0
2025 Safenlp 2024	246	SAT	6.80	8.02	6.12	12.7	1.25	-	✗
2025 Safenlp 2024	247	SAT	6.57	7.98	6.12	12.2	1.21	-	✗
2025 Safenlp 2024	248	SAT	6.75	6.06	6.07	12.2	1.24	15.8	18.0
2025 Safenlp 2024	249	SAT	6.67	8.02	6.12	12.2	1.25	-	✗
2025 Safenlp 2024	250	SAT	6.78	7.96	6.10	11.2	1.22	-	-
2025 Safenlp 2024	251	UNSAT	8.80	11.9	-	-	-	-	18.2

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	252	SAT	6.81	8.08	6.13	12.2	1.23	-	✗
2025 Safenlp 2024	253	SAT	6.46	5.97	6.08	12.3	1.25	14.8	18.0
2025 Safenlp 2024	254	SAT	6.75	5.96	6.13	11.2	1.23	-	17.8
2025 Safenlp 2024	255	SAT	6.78	8.09	6.10	12.3	1.40	-	✗
2025 Safenlp 2024	256	SAT	6.59	6.10	6.14	12.2	1.24	-	17.8
2025 Safenlp 2024	257	UNSAT	6.30	7.93	6.42	11.9	1.08	16.6	17.9
2025 Safenlp 2024	258	SAT	6.80	6.00	6.07	12.3	1.24	14.8	18.4
2025 Safenlp 2024	259	UNSAT	8.39	12.7	-	-	-	-	18.1
2025 Safenlp 2024	260	UNSAT	7.25	8.02	9.39	13.3	2.07	-	17.6
2025 Safenlp 2024	261	SAT	6.84	8.98	6.13	13.3	1.25	-	✗
2025 Safenlp 2024	262	UNSAT	7.48	8.23	18.0	29.6	7.31	-	18.1
2025 Safenlp 2024	263	SAT	6.81	8.95	6.11	11.2	1.23	-	18.3
2025 Safenlp 2024	264	SAT	6.86	8.04	6.10	11.2	1.26	-	✗
2025 Safenlp 2024	265	UNSAT	7.81	9.14	-	-	-	-	17.8
2025 Safenlp 2024	266	UNSAT	7.68	-	-	-	-	-	18.1
2025 Safenlp 2024	267	SAT	6.57	9.22	6.12	12.2	1.27	-	✗
2025 Safenlp 2024	268	SAT	6.66	5.98	6.04	12.3	1.24	15.0	17.9
2025 Safenlp 2024	269	SAT	6.84	8.05	6.10	11.3	1.25	-	✗
2025 Safenlp 2024	270	UNSAT	7.40	8.24	11.8	14.8	2.92	-	18.0
2025 Safenlp 2024	271	UNSAT	10.3	24.3	-	-	-	-	18.2
2025 Safenlp 2024	272	UNSAT	9.68	40.8	-	-	-	-	18.2
2025 Safenlp 2024	273	UNSAT	6.31	7.89	6.42	11.9	1.09	16.5	17.6
2025 Safenlp 2024	274	UNSAT	7.25	7.92	6.84	13.0	1.26	-	17.8
2025 Safenlp 2024	275	UNSAT	6.35	7.99	6.42	11.9	1.08	17.0	17.8
2025 Safenlp 2024	276	SAT	6.71	5.98	6.09	12.2	1.13	15.0	17.7
2025 Safenlp 2024	277	UNSAT	7.11	8.02	9.40	13.0	2.44	-	18.2
2025 Safenlp 2024	278	UNSAT	7.35	8.19	14.1	-	3.62	-	17.7
2025 Safenlp 2024	279	SAT	6.85	5.97	6.09	12.3	1.25	15.0	17.8
2025 Safenlp 2024	280	UNSAT	8.87	28.6	-	-	-	-	18.0
2025 Safenlp 2024	281	SAT	6.78	7.98	6.11	13.0	1.25	-	✗
2025 Safenlp 2024	282	SAT	6.67	7.93	6.14	12.2	1.24	-	✗
2025 Safenlp 2024	283	SAT	6.65	8.11	6.11	12.2	1.30	-	✗
2025 Safenlp 2024	284	SAT	6.52	8.04	6.14	12.2	1.41	-	✗
2025 Safenlp 2024	285	UNSAT	6.26	7.93	6.37	11.9	1.09	16.5	17.8
2025 Safenlp 2024	286	UNSAT	7.38	8.01	6.88	12.4	1.27	-	-
2025 Safenlp 2024	287	SAT	6.86	8.12	6.12	13.0	1.28	-	✗
2025 Safenlp 2024	288	UNSAT	8.06	8.78	-	-	-	-	18.2
2025 Safenlp 2024	289	UNSAT	7.24	8.28	-	14.3	16.5	-	18.1
2025 Safenlp 2024	290	UNSAT	14.0	-	-	-	-	-	17.9
2025 Safenlp 2024	291	UNSAT	7.15	8.33	15.4	16.0	3.87	-	17.8
2025 Safenlp 2024	292	SAT	6.69	5.98	6.07	12.2	1.25	15.3	18.1
2025 Safenlp 2024	293	UNSAT	8.46	12.6	-	-	-	-	18.1
2025 Safenlp 2024	294	UNSAT	7.76	8.30	22.4	-	-	-	17.9
2025 Safenlp 2024	295	SAT	6.48	5.96	6.09	12.2	1.07	15.0	17.6
2025 Safenlp 2024	296	SAT	6.58	5.95	6.07	12.2	1.24	14.9	18.2
2025 Safenlp 2024	297	UNSAT	7.18	8.33	17.5	14.0	8.03	-	18.0
2025 Safenlp 2024	298	UNSAT	7.56	8.38	21.7	24.8	19.5	-	17.9
2025 Safenlp 2024	299	UNSAT	6.28	7.92	6.41	12.0	1.07	16.5	17.7
2025 Safenlp 2024	300	UNSAT	7.48	8.26	17.9	26.3	5.16	-	18.1
2025 Safenlp 2024	301	SAT	6.58	5.98	6.06	12.2	1.24	15.0	17.8
2025 Safenlp 2024	302	UNSAT	7.13	7.97	10.5	13.3	2.08	-	17.6
2025 Safenlp 2024	303	SAT	6.75	5.95	6.06	11.2	1.26	15.0	17.7
2025 Safenlp 2024	304	UNSAT	7.48	8.28	25.7	15.0	15.3	-	17.6
2025 Safenlp 2024	305	SAT	6.84	7.98	6.14	11.2	1.23	-	✗
2025 Safenlp 2024	306	SAT	6.79	5.97	6.05	12.2	1.24	14.9	18.3
2025 Safenlp 2024	307	SAT	6.73	5.94	6.04	12.2	1.26	15.0	-
2025 Safenlp 2024	308	SAT	6.84	9.16	6.08	13.8	1.62	-	✗
2025 Safenlp 2024	309	SAT	6.64	7.15	6.11	12.2	1.29	-	✗
2025 Safenlp 2024	310	SAT	6.86	7.90	6.11	12.1	1.25	14.9	18.4
2025 Safenlp 2024	311	UNSAT	6.30	7.96	6.39	12.0	1.07	16.6	17.7
2025 Safenlp 2024	312	SAT	6.81	9.02	6.16	13.5	1.42	-	✗
2025 Safenlp 2024	313	UNSAT	6.26	7.93	6.36	12.0	1.08	16.3	17.9
2025 Safenlp 2024	314	UNSAT	7.09	8.00	8.48	13.3	2.26	-	17.9
2025 Safenlp 2024	315	UNSAT	6.33	7.94	6.36	10.9	1.07	16.8	17.9
2025 Safenlp 2024	316	UNSAT	6.35	7.95	6.39	11.9	1.07	16.6	17.8
2025 Safenlp 2024	317	SAT	6.56	6.64	6.11	12.2	1.24	-	17.8
2025 Safenlp 2024	318	UNSAT	7.13	8.24	11.8	14.2	2.55	-	17.7
2025 Safenlp 2024	319	UNSAT	7.72	8.25	-	-	-	-	18.2

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	320	UNSAT	7.22	8.24	19.5	14.0	4.86	-	18.1
2025 Safenlp 2024	321	UNSAT	7.28	8.03	10.3	16.3	2.82	-	-
2025 Safenlp 2024	322	SAT	6.79	7.96	6.10	12.2	1.24	-	✗
2025 Safenlp 2024	323	SAT	6.77	8.95	6.11	11.3	1.25	-	✗
2025 Safenlp 2024	324	SAT	6.85	6.52	6.11	12.2	1.26	-	18.3
2025 Safenlp 2024	325	SAT	6.76	5.97	6.06	12.3	1.28	14.9	18.1
2025 Safenlp 2024	326	SAT	6.72	7.95	6.12	11.2	1.29	-	✗
2025 Safenlp 2024	327	SAT	6.60	9.01	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	328	UNSAT	6.31	7.94	6.36	12.0	1.07	16.6	17.6
2025 Safenlp 2024	329	SAT	6.79	6.08	6.12	12.3	1.23	15.1	17.9
2025 Safenlp 2024	330	UNSAT	8.36	11.4	-	-	-	-	17.9
2025 Safenlp 2024	331	SAT	6.57	7.99	6.11	12.2	1.25	15.0	17.8
2025 Safenlp 2024	332	SAT	6.54	6.14	6.07	11.3	1.24	-	18.8
2025 Safenlp 2024	333	UNSAT	6.28	7.95	6.41	11.9	1.08	16.5	-
2025 Safenlp 2024	334	SAT	6.81	5.97	6.09	11.3	1.25	14.8	18.1
2025 Safenlp 2024	335	SAT	6.81	8.99	6.11	13.1	1.48	-	✗
2025 Safenlp 2024	336	UNSAT	6.23	7.94	6.39	11.9	1.07	16.5	19.1
2025 Safenlp 2024	337	UNSAT	9.27	32.5	-	-	-	-	18.1
2025 Safenlp 2024	338	UNSAT	7.15	8.37	15.9	18.2	4.56	-	18.0
2025 Safenlp 2024	339	UNSAT	6.28	7.92	6.37	11.0	1.07	16.6	17.6
2025 Safenlp 2024	340	UNSAT	7.40	8.12	11.2	14.5	2.33	-	18.0
2025 Safenlp 2024	341	UNSAT	7.41	8.06	7.57	12.9	2.10	-	17.8
2025 Safenlp 2024	342	UNSAT	7.08	8.04	10.5	13.6	2.98	-	-
2025 Safenlp 2024	343	SAT	6.78	9.01	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	344	UNSAT	6.30	7.92	6.37	11.0	1.08	16.3	17.8
2025 Safenlp 2024	345	UNSAT	7.47	8.21	18.0	15.8	3.71	-	17.7
2025 Safenlp 2024	346	SAT	6.78	8.10	6.12	12.0	1.64	-	✗
2025 Safenlp 2024	347	SAT	6.83	6.30	6.08	12.2	1.26	-	18.4
2025 Safenlp 2024	348	UNSAT	6.29	7.92	6.39	12.0	1.09	16.5	17.7
2025 Safenlp 2024	349	SAT	6.81	6.22	6.09	12.2	1.25	14.8	18.2
2025 Safenlp 2024	350	SAT	6.65	7.98	6.11	11.3	1.22	-	✗
2025 Safenlp 2024	351	SAT	6.65	8.03	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	352	UNSAT	7.37	8.02	9.80	13.8	1.76	-	17.8
2025 Safenlp 2024	353	UNSAT	12.6	-	-	-	-	-	18.2
2025 Safenlp 2024	354	UNSAT	6.30	8.05	6.38	12.0	1.13	16.3	17.6
2025 Safenlp 2024	355	UNSAT	7.55	8.41	-	-	-	-	18.0
2025 Safenlp 2024	356	UNSAT	7.40	8.16	12.3	21.5	3.87	-	18.1
2025 Safenlp 2024	357	SAT	6.61	7.99	6.06	12.2	1.24	-	✗
2025 Safenlp 2024	358	SAT	6.71	8.95	6.08	11.2	1.24	-	✗
2025 Safenlp 2024	359	UNSAT	6.47	7.91	6.36	12.0	1.08	16.5	17.6
2025 Safenlp 2024	360	SAT	6.81	8.04	6.10	12.3	1.24	-	✗
2025 Safenlp 2024	361	SAT	6.55	8.52	6.09	26.6	-	-	✗
2025 Safenlp 2024	362	SAT	6.83	8.98	6.07	12.2	1.25	-	✗
2025 Safenlp 2024	363	UNSAT	6.30	7.97	6.40	11.9	1.08	16.6	17.6
2025 Safenlp 2024	364	SAT	6.76	8.96	6.08	12.2	1.24	-	✗
2025 Safenlp 2024	365	SAT	6.47	5.98	6.05	12.3	1.25	15.1	18.0
2025 Safenlp 2024	366	UNSAT	7.21	7.99	7.39	12.8	1.98	-	17.8
2025 Safenlp 2024	367	UNSAT	7.28	8.05	6.60	12.7	1.26	-	17.8
2025 Safenlp 2024	368	SAT	6.84	8.14	6.12	13.0	1.45	-	✗
2025 Safenlp 2024	369	SAT	6.84	8.94	6.12	11.2	1.25	-	✗
2025 Safenlp 2024	370	SAT	6.83	8.04	6.09	13.0	2.40	-	✗
2025 Safenlp 2024	371	UNSAT	7.23	7.97	7.00	13.2	1.53	-	17.8
2025 Safenlp 2024	372	UNSAT	6.32	8.00	6.44	12.5	1.07	16.8	17.8
2025 Safenlp 2024	373	UNSAT	6.29	7.97	6.40	11.9	1.07	16.4	17.7
2025 Safenlp 2024	374	SAT	6.56	6.50	6.13	11.3	1.22	-	17.9
2025 Safenlp 2024	375	UNSAT	13.0	73.0	-	-	-	-	17.8
2025 Safenlp 2024	376	UNSAT	7.02	7.96	6.58	12.7	1.27	-	18.1
2025 Safenlp 2024	377	SAT	6.57	7.16	6.12	12.3	1.24	14.9	17.8
2025 Safenlp 2024	378	SAT	6.58	7.93	6.11	12.3	1.24	-	✗
2025 Safenlp 2024	379	SAT	6.77	5.98	6.05	12.2	1.26	15.1	18.1
2025 Safenlp 2024	380	UNSAT	6.32	7.94	6.38	11.0	1.06	16.5	18.0
2025 Safenlp 2024	381	SAT	6.82	8.18	6.14	12.2	1.25	-	✗
2025 Safenlp 2024	382	SAT	6.82	8.96	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	383	SAT	6.77	5.99	6.03	12.2	1.24	14.8	18.0
2025 Safenlp 2024	384	UNSAT	6.34	7.90	6.40	11.9	1.13	16.4	17.8
2025 Safenlp 2024	385	SAT	6.62	9.33	6.11	12.2	1.29	-	✗
2025 Safenlp 2024	386	SAT	6.82	6.05	6.11	11.2	1.25	-	✗
2025 Safenlp 2024	387	UNSAT	6.31	7.96	6.39	11.9	1.08	16.6	17.8

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	388	SAT	6.71	6.06	6.08	12.2	1.26	14.8	18.1
2025 Safenlp 2024	389	SAT	6.83	5.98	6.07	12.2	1.25	14.9	17.7
2025 Safenlp 2024	390	UNSAT	6.43	7.92	6.37	10.9	1.08	16.5	17.7
2025 Safenlp 2024	391	UNSAT	6.29	7.94	6.39	11.9	1.09	16.4	17.9
2025 Safenlp 2024	392	SAT	6.85	7.97	6.06	12.2	1.23	-	✗
2025 Safenlp 2024	393	SAT	6.52	8.96	6.11	12.3	1.24	-	✗
2025 Safenlp 2024	394	SAT	6.83	9.01	6.10	11.2	1.26	-	✗
2025 Safenlp 2024	395	UNSAT	6.29	7.92	6.38	11.9	1.09	16.5	17.8
2025 Safenlp 2024	396	SAT	6.84	7.96	6.09	12.3	1.25	-	✗
2025 Safenlp 2024	397	SAT	6.68	6.02	6.01	12.2	1.27	14.8	18.3
2025 Safenlp 2024	398	SAT	6.82	6.05	6.11	12.2	1.25	-	18.0
2025 Safenlp 2024	399	UNSAT	6.29	7.92	6.39	12.0	1.12	17.0	17.9
2025 Safenlp 2024	400	SAT	6.82	9.11	6.12	12.2	1.92	-	✗
2025 Safenlp 2024	401	SAT	6.49	8.02	6.11	11.2	1.22	-	✗
2025 Safenlp 2024	402	SAT	6.80	6.71	6.10	12.3	1.23	-	✗
2025 Safenlp 2024	403	UNSAT	7.44	8.29	-	16.2	-	-	18.0
2025 Safenlp 2024	404	UNSAT	9.59	56.3	-	-	-	-	18.2
2025 Safenlp 2024	405	SAT	6.55	9.00	6.09	12.3	1.26	-	✗
2025 Safenlp 2024	406	SAT	6.80	5.95	6.04	12.2	1.23	15.0	18.1
2025 Safenlp 2024	407	UNSAT	7.12	7.99	10.9	15.0	2.61	-	17.9
2025 Safenlp 2024	408	UNSAT	7.69	8.25	25.2	23.8	8.82	-	17.7
2025 Safenlp 2024	409	SAT	6.70	9.01	6.12	12.7	1.57	-	✗
2025 Safenlp 2024	410	UNSAT	6.26	7.94	6.38	11.0	1.07	16.3	17.8
2025 Safenlp 2024	411	UNSAT	6.29	7.96	6.39	11.0	1.09	16.7	-
2025 Safenlp 2024	412	UNSAT	7.49	8.28	17.2	16.0	5.22	-	18.1
2025 Safenlp 2024	413	SAT	6.83	9.02	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	414	UNSAT	6.32	8.00	6.36	11.0	1.08	16.7	17.7
2025 Safenlp 2024	415	UNSAT	6.40	7.95	6.39	11.4	1.07	16.5	17.7
2025 Safenlp 2024	416	SAT	6.80	5.96	6.05	12.2	1.25	14.8	17.8
2025 Safenlp 2024	417	UNSAT	6.31	7.95	6.39	10.9	1.08	16.5	17.9
2025 Safenlp 2024	418	UNSAT	6.43	7.91	6.37	12.1	1.07	16.4	17.8
2025 Safenlp 2024	419	SAT	6.72	6.00	6.06	12.3	1.25	14.7	17.9
2025 Safenlp 2024	420	UNSAT	6.29	7.97	6.37	12.0	1.07	16.4	17.7
2025 Safenlp 2024	421	SAT	6.81	6.04	6.10	12.2	1.24	-	18.3
2025 Safenlp 2024	422	UNSAT	6.29	7.92	6.33	11.0	1.07	16.6	17.8
2025 Safenlp 2024	423	SAT	6.60	5.98	6.06	12.2	1.09	15.1	17.8
2025 Safenlp 2024	424	SAT	6.81	7.93	6.11	12.2	1.25	14.8	18.0
2025 Safenlp 2024	425	UNSAT	7.13	7.98	8.32	12.2	2.25	-	17.7
2025 Safenlp 2024	426	SAT	6.75	8.05	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	427	UNSAT	6.24	7.91	6.39	11.0	1.08	16.6	17.8
2025 Safenlp 2024	428	SAT	6.87	7.99	6.12	12.2	1.23	-	✗
2025 Safenlp 2024	429	UNSAT	7.87	9.23	-	-	-	-	17.9
2025 Safenlp 2024	430	SAT	6.75	8.01	6.08	12.2	1.23	-	✗
2025 Safenlp 2024	431	UNSAT	6.27	7.94	6.49	12.5	1.07	16.6	-
2025 Safenlp 2024	432	SAT	6.86	6.13	6.10	12.2	1.26	-	18.0
2025 Safenlp 2024	433	SAT	6.81	8.83	6.13	12.2	1.25	-	✗
2025 Safenlp 2024	434	SAT	6.55	7.99	6.11	12.3	1.25	-	✗
2025 Safenlp 2024	435	UNSAT	7.30	8.08	17.3	13.8	8.56	-	18.2
2025 Safenlp 2024	436	SAT	6.81	6.61	6.13	11.2	1.24	-	18.0
2025 Safenlp 2024	437	UNSAT	6.25	7.96	6.39	11.0	1.07	16.6	17.7
2025 Safenlp 2024	438	SAT	6.86	8.00	6.09	11.2	1.25	-	✗
2025 Safenlp 2024	439	SAT	6.56	8.01	6.07	14.7	-	-	✗
2025 Safenlp 2024	440	SAT	6.70	5.95	6.05	12.3	1.28	15.1	18.0
2025 Safenlp 2024	441	SAT	6.73	6.40	6.12	11.2	1.24	-	✗
2025 Safenlp 2024	442	UNSAT	6.35	7.94	6.37	12.0	1.07	16.7	18.0
2025 Safenlp 2024	443	SAT	6.83	7.96	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	444	UNSAT	6.31	7.91	6.40	12.0	1.08	16.5	-
2025 Safenlp 2024	445	UNSAT	7.07	7.93	7.23	13.5	1.46	-	18.0
2025 Safenlp 2024	446	SAT	6.56	8.96	6.11	12.2	1.29	-	✗
2025 Safenlp 2024	447	SAT	6.86	8.99	6.12	12.3	1.43	-	✗
2025 Safenlp 2024	448	SAT	6.85	5.98	6.13	12.2	1.23	14.9	18.0
2025 Safenlp 2024	449	SAT	6.76	8.94	6.10	12.3	1.28	-	✗
2025 Safenlp 2024	450	UNSAT	12.0	42.3	-	-	-	-	18.0
2025 Safenlp 2024	451	SAT	6.63	5.97	6.05	12.2	1.25	14.9	18.0
2025 Safenlp 2024	452	UNSAT	7.64	8.86	-	-	14.0	-	18.1
2025 Safenlp 2024	453	SAT	6.73	8.01	6.08	12.3	1.25	-	✗
2025 Safenlp 2024	454	UNSAT	15.7	25.7	-	-	-	-	18.0
2025 Safenlp 2024	455	SAT	6.84	8.00	6.10	12.2	1.29	-	✗

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	456	UNSAT	7.47	8.12	11.5	13.8	2.22	-	17.9
2025 Safenlp 2024	457	SAT	6.80	8.02	6.13	12.2	1.26	-	✗
2025 Safenlp 2024	458	SAT	6.82	5.95	6.02	11.3	1.23	15.1	18.2
2025 Safenlp 2024	459	UNSAT	7.17	8.53	-	26.2	-	-	17.7
2025 Safenlp 2024	460	SAT	6.77	5.95	6.09	12.2	1.25	15.3	17.9
2025 Safenlp 2024	461	SAT	6.93	8.04	6.11	11.2	1.26	-	✗
2025 Safenlp 2024	462	SAT	6.80	5.95	6.05	12.2	1.23	15.0	18.0
2025 Safenlp 2024	463	SAT	6.84	8.89	6.10	12.2	1.22	-	✗
2025 Safenlp 2024	464	SAT	6.81	7.97	6.09	12.7	1.27	-	✗
2025 Safenlp 2024	465	SAT	6.70	6.69	6.10	12.2	1.22	14.8	18.0
2025 Safenlp 2024	466	SAT	6.83	8.02	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	467	SAT	6.79	8.10	6.09	12.7	1.42	-	✗
2025 Safenlp 2024	468	SAT	6.59	8.90	6.11	12.2	1.28	-	✗
2025 Safenlp 2024	469	SAT	6.72	5.98	6.06	12.2	1.23	15.1	-
2025 Safenlp 2024	470	UNSAT	7.31	8.00	9.09	13.8	2.24	-	17.9
2025 Safenlp 2024	471	SAT	6.79	6.45	6.09	11.2	1.28	-	18.5
2025 Safenlp 2024	472	SAT	6.87	7.98	6.08	12.2	1.24	-	✗
2025 Safenlp 2024	473	SAT	6.75	6.29	6.13	12.3	1.24	14.7	18.0
2025 Safenlp 2024	474	SAT	6.65	7.97	6.10	12.2	1.24	-	✗
2025 Safenlp 2024	475	UNSAT	7.37	8.20	13.0	14.3	2.42	-	18.0
2025 Safenlp 2024	476	SAT	6.78	8.97	6.10	11.2	1.29	-	18.2
2025 Safenlp 2024	477	UNSAT	6.32	7.88	6.38	11.9	1.07	16.6	17.7
2025 Safenlp 2024	478	SAT	6.85	7.17	6.09	11.2	1.25	-	✗
2025 Safenlp 2024	479	UNSAT	6.28	7.94	6.39	12.0	1.07	16.6	17.8
2025 Safenlp 2024	480	SAT	6.51	5.97	6.06	12.2	1.24	15.0	18.0
2025 Safenlp 2024	481	SAT	6.83	8.78	6.08	13.3	1.76	-	✗
2025 Safenlp 2024	482	SAT	6.60	7.99	6.11	12.2	1.26	-	✗
2025 Safenlp 2024	483	SAT	6.50	7.94	6.11	12.2	1.25	-	✗
2025 Safenlp 2024	484	SAT	6.49	5.96	6.04	12.2	1.09	15.0	17.9
2025 Safenlp 2024	485	UNSAT	7.24	8.10	9.13	13.3	2.10	-	17.9
2025 Safenlp 2024	486	SAT	6.84	7.94	6.07	12.2	1.27	-	✗
2025 Safenlp 2024	487	SAT	6.64	7.99	6.09	11.2	1.24	-	✗
2025 Safenlp 2024	488	SAT	6.71	5.95	6.07	12.2	1.24	14.9	18.1
2025 Safenlp 2024	489	SAT	6.88	7.20	6.11	12.2	1.25	-	✗
2025 Safenlp 2024	490	SAT	6.59	8.93	6.07	12.2	1.24	-	18.0
2025 Safenlp 2024	491	SAT	6.88	8.00	6.10	12.2	1.22	-	✗
2025 Safenlp 2024	492	SAT	6.83	9.27	6.09	12.7	1.27	-	✗
2025 Safenlp 2024	493	UNSAT	7.25	8.10	10.9	14.3	3.99	-	17.9
2025 Safenlp 2024	494	SAT	6.60	9.01	6.12	13.0	1.62	-	✗
2025 Safenlp 2024	495	SAT	6.83	9.00	6.07	11.2	1.24	-	✗
2025 Safenlp 2024	496	SAT	6.79	8.93	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	497	UNSAT	7.34	7.97	6.86	11.5	1.42	-	17.9
2025 Safenlp 2024	498	SAT	6.86	8.01	6.09	11.7	1.45	-	✗
2025 Safenlp 2024	499	UNSAT	6.27	7.93	6.41	12.0	1.07	16.3	17.8
2025 Safenlp 2024	500	SAT	6.80	9.01	6.09	11.2	1.27	-	✗
2025 Safenlp 2024	501	SAT	6.51	7.95	6.13	11.2	1.24	-	✗
2025 Safenlp 2024	502	SAT	6.79	6.00	6.06	12.2	1.30	15.2	18.5
2025 Safenlp 2024	503	UNSAT	7.66	8.31	21.0	-	-	-	18.0
2025 Safenlp 2024	504	SAT	6.52	5.93	6.03	11.2	1.29	14.9	17.9
2025 Safenlp 2024	505	UNSAT	6.30	7.87	6.47	12.4	1.07	16.8	17.9
2025 Safenlp 2024	506	UNSAT	6.33	7.84	6.34	11.0	1.07	16.4	18.0
2025 Safenlp 2024	507	UNSAT	7.37	8.18	17.9	21.3	4.55	-	17.8
2025 Safenlp 2024	508	SAT	6.72	7.94	6.09	12.3	1.24	14.9	18.4
2025 Safenlp 2024	509	SAT	6.84	8.96	6.07	11.2	1.24	-	✗
2025 Safenlp 2024	510	UNSAT	6.26	7.99	6.38	11.9	1.06	16.4	17.9
2025 Safenlp 2024	511	UNSAT	6.28	7.91	6.35	11.9	1.07	16.6	17.8
2025 Safenlp 2024	512	UNSAT	7.73	8.34	18.7	18.1	3.90	-	18.2
2025 Safenlp 2024	513	SAT	6.83	8.04	6.11	12.2	1.23	-	✗
2025 Safenlp 2024	514	SAT	6.83	8.01	6.11	11.7	1.23	-	✗
2025 Safenlp 2024	515	UNSAT	7.53	8.31	22.4	19.1	-	-	18.0
2025 Safenlp 2024	516	SAT	6.76	6.35	6.04	12.1	1.24	-	18.2
2025 Safenlp 2024	517	SAT	6.58	9.13	6.08	12.2	1.24	-	✗
2025 Safenlp 2024	518	SAT	6.81	6.02	6.07	11.2	1.25	-	17.7
2025 Safenlp 2024	519	SAT	6.71	9.00	6.06	11.2	1.23	-	✗
2025 Safenlp 2024	520	UNSAT	6.29	7.92	6.37	12.0	1.07	16.3	17.7
2025 Safenlp 2024	521	SAT	6.71	6.03	6.04	12.2	1.25	14.9	18.1
2025 Safenlp 2024	522	UNSAT	7.65	8.44	24.7	22.1	17.5	-	18.1
2025 Safenlp 2024	523	UNSAT	8.04	9.33	-	-	-	-	17.9

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	524	UNSAT	6.33	7.91	6.33	12.0	1.07	16.7	17.7
2025 Safenlp 2024	525	SAT	6.80	8.01	6.09	12.2	1.24	15.2	-
2025 Safenlp 2024	526	SAT	6.54	6.01	6.01	12.2	1.24	14.9	18.1
2025 Safenlp 2024	527	SAT	6.73	8.01	6.11	12.2	1.25	-	✗
2025 Safenlp 2024	528	SAT	6.59	6.05	6.11	12.2	1.27	-	17.9
2025 Safenlp 2024	529	SAT	6.73	8.98	6.10	12.2	1.24	-	✗
2025 Safenlp 2024	530	UNSAT	7.16	8.32	11.6	13.3	2.30	-	17.9
2025 Safenlp 2024	531	SAT	6.76	5.95	6.02	12.1	1.25	15.0	18.1
2025 Safenlp 2024	532	SAT	6.56	6.00	6.08	12.2	1.26	14.8	18.1
2025 Safenlp 2024	533	UNSAT	8.37	9.48	-	-	-	-	18.1
2025 Safenlp 2024	534	UNSAT	8.81	18.5	-	-	-	-	18.0
2025 Safenlp 2024	535	UNSAT	7.00	7.99	7.83	14.0	2.07	-	18.0
2025 Safenlp 2024	536	SAT	6.51	7.98	6.11	12.7	1.57	-	✗
2025 Safenlp 2024	537	UNSAT	7.88	11.1	-	-	-	-	18.3
2025 Safenlp 2024	538	SAT	6.58	6.03	6.09	12.2	1.25	15.0	18.5
2025 Safenlp 2024	539	UNSAT	11.9	26.1	-	-	-	-	18.1
2025 Safenlp 2024	540	SAT	6.77	5.98	6.05	12.2	1.27	14.9	18.2
2025 Safenlp 2024	541	SAT	6.77	5.93	6.05	11.2	1.24	14.7	18.2
2025 Safenlp 2024	542	UNSAT	6.28	7.93	6.37	11.9	1.09	16.7	17.9
2025 Safenlp 2024	543	UNSAT	7.43	8.31	-	16.0	15.2	-	17.7
2025 Safenlp 2024	544	SAT	6.66	8.03	6.12	12.3	1.28	-	✗
2025 Safenlp 2024	545	UNSAT	7.18	8.10	15.2	14.8	3.85	-	18.0
2025 Safenlp 2024	546	SAT	6.86	8.94	6.08	12.2	1.25	-	✗
2025 Safenlp 2024	547	SAT	6.77	5.98	6.04	12.3	1.07	14.8	18.0
2025 Safenlp 2024	548	SAT	6.78	8.97	6.11	12.3	1.23	-	✗
2025 Safenlp 2024	549	SAT	6.82	6.46	6.06	11.2	1.23	15.4	18.2
2025 Safenlp 2024	550	SAT	6.74	8.00	6.07	11.8	1.26	-	✗
2025 Safenlp 2024	551	SAT	6.76	8.00	6.09	12.1	1.24	-	✗
2025 Safenlp 2024	552	SAT	6.74	5.93	6.01	12.2	1.22	14.9	18.4
2025 Safenlp 2024	553	SAT	6.81	7.97	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	554	SAT	6.63	6.48	6.10	11.3	1.24	-	18.2
2025 Safenlp 2024	555	SAT	6.84	8.16	6.07	12.3	1.25	-	✗
2025 Safenlp 2024	556	UNSAT	8.26	9.00	-	-	-	-	18.1
2025 Safenlp 2024	557	UNSAT	7.25	8.04	8.59	13.1	1.95	-	18.0
2025 Safenlp 2024	558	UNSAT	6.29	7.94	6.34	11.0	1.08	16.5	17.8
2025 Safenlp 2024	559	SAT	6.81	9.14	6.11	12.2	1.48	-	✗
2025 Safenlp 2024	560	SAT	6.67	8.01	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	561	SAT	6.77	5.97	6.07	12.3	1.24	15.1	18.0
2025 Safenlp 2024	562	UNSAT	6.28	7.94	6.48	12.5	1.08	16.7	17.8
2025 Safenlp 2024	563	UNSAT	6.29	7.99	6.34	11.9	1.07	16.5	17.9
2025 Safenlp 2024	564	SAT	6.55	8.04	6.10	11.7	1.48	-	✗
2025 Safenlp 2024	565	UNSAT	8.02	8.69	-	-	-	-	18.2
2025 Safenlp 2024	566	UNSAT	6.26	7.93	6.38	12.0	1.07	16.3	17.7
2025 Safenlp 2024	567	UNSAT	7.36	8.33	22.7	-	16.7	-	18.3
2025 Safenlp 2024	568	UNSAT	6.29	7.99	6.38	12.0	1.07	16.7	17.8
2025 Safenlp 2024	569	UNSAT	6.31	7.93	6.33	12.0	1.07	16.6	17.8
2025 Safenlp 2024	570	SAT	6.58	7.98	6.09	11.5	1.26	-	✗
2025 Safenlp 2024	571	SAT	6.80	8.96	6.11	12.2	1.24	-	✗
2025 Safenlp 2024	572	SAT	6.82	7.99	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	573	SAT	6.85	7.08	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	574	UNSAT	8.14	8.71	-	-	-	-	18.3
2025 Safenlp 2024	575	SAT	6.62	5.96	6.07	12.3	1.25	15.0	18.2
2025 Safenlp 2024	576	SAT	6.66	8.03	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	577	SAT	6.62	8.91	6.10	11.2	1.26	-	✗
2025 Safenlp 2024	578	UNSAT	8.43	9.20	-	-	-	-	17.9
2025 Safenlp 2024	579	SAT	6.86	9.03	6.08	13.0	1.43	-	✗
2025 Safenlp 2024	580	SAT	6.79	6.01	6.08	12.2	1.25	-	-
2025 Safenlp 2024	581	UNSAT	6.29	7.97	6.37	12.0	1.10	16.9	17.8
2025 Safenlp 2024	582	UNSAT	7.14	8.01	10.1	13.3	2.37	-	17.7
2025 Safenlp 2024	583	UNSAT	7.23	8.29	16.7	16.5	3.52	-	17.9
2025 Safenlp 2024	584	UNSAT	7.54	8.60	-	17.3	-	-	17.7
2025 Safenlp 2024	585	SAT	6.72	7.97	6.07	12.3	1.23	-	✗
2025 Safenlp 2024	586	UNSAT	7.17	8.04	7.66	13.8	2.05	-	17.8
2025 Safenlp 2024	587	SAT	6.79	8.03	6.10	12.3	1.24	-	✗
2025 Safenlp 2024	588	UNSAT	9.05	29.0	-	-	-	-	18.2
2025 Safenlp 2024	589	UNSAT	7.65	8.31	-	-	-	-	17.9
2025 Safenlp 2024	590	SAT	6.83	7.99	6.06	13.0	1.25	-	✗
2025 Safenlp 2024	591	UNSAT	8.42	8.82	-	-	-	-	18.3

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	592	SAT	6.47	5.98	6.08	12.2	1.07	14.7	17.8
2025 Safenlp 2024	593	UNSAT	6.27	8.00	6.38	12.0	1.08	16.3	17.6
2025 Safenlp 2024	594	SAT	6.78	8.98	6.12	11.7	1.43	-	✗
2025 Safenlp 2024	595	SAT	6.70	8.94	6.11	12.2	1.25	-	✗
2025 Safenlp 2024	596	SAT	6.79	7.91	6.11	12.2	1.23	-	✗
2025 Safenlp 2024	597	SAT	6.55	7.99	6.06	11.2	1.23	-	✗
2025 Safenlp 2024	598	UNSAT	7.55	8.68	25.3	-	19.5	-	18.2
2025 Safenlp 2024	599	UNSAT	7.23	8.07	13.0	16.0	3.40	-	18.1
2025 Safenlp 2024	600	SAT	6.54	8.99	6.06	12.2	1.24	-	✗
2025 Safenlp 2024	601	UNSAT	7.18	7.91	7.11	13.0	1.64	-	17.9
2025 Safenlp 2024	602	SAT	6.80	8.88	6.11	12.3	1.24	-	✗
2025 Safenlp 2024	603	UNSAT	7.25	8.02	12.1	13.8	3.08	-	-
2025 Safenlp 2024	604	UNSAT	12.4	-	-	-	-	-	17.9
2025 Safenlp 2024	605	UNSAT	7.39	9.64	-	-	18.0	-	17.8
2025 Safenlp 2024	606	UNSAT	6.28	7.98	6.39	12.0	1.08	16.5	17.9
2025 Safenlp 2024	607	UNSAT	7.01	7.95	6.93	13.0	1.55	-	17.6
2025 Safenlp 2024	608	SAT	6.76	5.99	6.05	12.2	1.28	15.0	19.3
2025 Safenlp 2024	609	SAT	6.72	8.99	6.10	13.0	1.44	-	✗
2025 Safenlp 2024	610	SAT	6.78	9.40	6.12	15.5	2.32	-	✗
2025 Safenlp 2024	611	SAT	6.64	9.01	6.10	13.0	2.15	-	✗
2025 Safenlp 2024	612	UNSAT	7.24	8.14	18.5	18.5	4.58	-	17.8
2025 Safenlp 2024	613	SAT	6.81	7.97	6.08	12.1	1.27	14.9	18.2
2025 Safenlp 2024	614	SAT	6.70	5.97	6.09	11.2	1.25	15.3	18.2
2025 Safenlp 2024	615	SAT	6.81	8.01	6.11	12.2	1.27	-	✗
2025 Safenlp 2024	616	SAT	6.85	8.98	6.10	12.9	1.76	-	✗
2025 Safenlp 2024	617	SAT	6.77	6.25	6.11	12.2	1.23	-	-
2025 Safenlp 2024	618	SAT	6.55	6.01	6.05	11.2	1.25	15.3	18.1
2025 Safenlp 2024	619	SAT	6.81	8.98	6.13	12.3	1.24	-	✗
2025 Safenlp 2024	620	SAT	6.83	7.95	6.08	12.1	1.24	-	✗
2025 Safenlp 2024	621	SAT	6.84	8.86	6.10	11.3	1.25	-	✗
2025 Safenlp 2024	622	UNSAT	7.27	8.00	7.13	12.7	1.81	-	17.7
2025 Safenlp 2024	623	SAT	6.83	8.93	6.09	12.2	1.28	-	✗
2025 Safenlp 2024	624	UNSAT	7.14	7.99	6.69	11.7	1.27	-	17.8
2025 Safenlp 2024	625	SAT	6.79	8.14	6.12	11.7	1.25	-	✗
2025 Safenlp 2024	626	SAT	6.59	9.01	6.08	12.2	1.24	-	✗
2025 Safenlp 2024	627	SAT	6.56	5.96	6.07	11.2	1.25	15.5	18.1
2025 Safenlp 2024	628	SAT	6.68	8.97	6.10	12.2	1.23	-	-
2025 Safenlp 2024	629	SAT	6.69	5.92	6.04	12.2	1.26	15.1	17.9
2025 Safenlp 2024	630	SAT	6.80	9.25	6.11	13.0	1.30	-	✗
2025 Safenlp 2024	631	SAT	6.87	8.03	6.09	12.2	1.22	-	✗
2025 Safenlp 2024	632	UNSAT	8.77	9.48	-	-	-	-	18.2
2025 Safenlp 2024	633	SAT	6.56	9.00	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	634	SAT	6.77	7.97	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	635	UNSAT	6.29	7.91	6.39	11.9	1.09	16.3	-
2025 Safenlp 2024	636	SAT	6.85	8.06	6.10	11.7	1.24	-	✗
2025 Safenlp 2024	637	SAT	6.81	8.91	6.10	11.1	1.24	-	✗
2025 Safenlp 2024	638	SAT	6.69	8.02	6.08	12.7	1.24	-	✗
2025 Safenlp 2024	639	UNSAT	6.30	7.87	6.43	11.9	1.07	16.2	17.6
2025 Safenlp 2024	640	UNSAT	7.32	8.04	9.66	14.7	2.43	-	17.6
2025 Safenlp 2024	641	UNSAT	8.90	10.9	-	-	-	-	17.7
2025 Safenlp 2024	642	SAT	6.81	5.95	6.04	12.2	1.23	14.9	17.9
2025 Safenlp 2024	643	UNSAT	6.29	7.86	6.45	12.5	1.07	16.5	17.8
2025 Safenlp 2024	644	SAT	6.76	9.00	6.11	11.3	1.23	-	✗
2025 Safenlp 2024	645	UNSAT	7.22	8.07	12.2	14.5	2.76	-	17.9
2025 Safenlp 2024	646	SAT	6.83	8.02	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	647	SAT	6.84	8.02	6.12	12.2	1.23	-	✗
2025 Safenlp 2024	648	SAT	6.85	9.75	6.11	✗	1.24	-	✗
2025 Safenlp 2024	649	SAT	6.80	8.93	6.10	12.3	1.22	-	✗
2025 Safenlp 2024	650	SAT	6.79	8.96	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	651	SAT	6.79	8.99	6.09	12.2	1.28	-	✗
2025 Safenlp 2024	652	SAT	6.83	6.41	6.10	12.2	1.28	-	✗
2025 Safenlp 2024	653	UNSAT	6.31	7.93	6.38	11.9	1.06	16.5	17.8
2025 Safenlp 2024	654	SAT	6.84	6.15	6.04	12.2	1.28	-	18.3
2025 Safenlp 2024	655	SAT	6.83	7.94	6.10	11.2	1.27	-	✗
2025 Safenlp 2024	656	SAT	6.54	7.97	6.08	12.3	1.27	-	17.8
2025 Safenlp 2024	657	SAT	6.64	8.00	6.05	11.2	1.27	-	✗
2025 Safenlp 2024	658	SAT	6.78	5.97	6.09	11.2	1.25	14.8	18.1
2025 Safenlp 2024	659	UNSAT	6.29	7.99	6.39	12.0	1.07	16.6	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	660	SAT	6.76	8.99	6.10	12.2	1.27	-	✗
2025 Safenlp 2024	661	SAT	6.77	8.96	6.11	11.2	1.23	-	✗
2025 Safenlp 2024	662	UNSAT	7.13	8.00	8.92	12.0	2.06	-	17.9
2025 Safenlp 2024	663	UNSAT	6.29	7.93	6.37	12.0	1.08	16.6	17.9
2025 Safenlp 2024	664	UNSAT	7.35	8.05	8.94	12.6	2.10	-	18.1
2025 Safenlp 2024	665	SAT	6.80	7.97	6.09	12.2	1.29	-	✗
2025 Safenlp 2024	666	SAT	6.65	5.96	6.07	12.2	1.10	15.1	17.9
2025 Safenlp 2024	667	UNSAT	6.26	7.92	6.40	12.0	1.12	16.7	17.7
2025 Safenlp 2024	668	UNSAT	7.22	8.08	8.67	12.5	2.10	-	17.9
2025 Safenlp 2024	669	UNSAT	6.29	7.95	6.35	11.9	1.08	16.5	17.8
2025 Safenlp 2024	670	UNSAT	7.10	8.28	18.0	14.2	10.1	-	18.0
2025 Safenlp 2024	671	UNSAT	7.10	8.08	12.3	12.3	2.46	-	17.8
2025 Safenlp 2024	672	SAT	6.71	7.96	6.11	12.2	1.24	-	✗
2025 Safenlp 2024	673	SAT	6.65	6.30	6.14	12.3	1.24	-	18.2
2025 Safenlp 2024	674	UNSAT	7.14	8.18	16.0	13.8	3.73	-	17.6
2025 Safenlp 2024	675	UNSAT	8.98	32.1	-	-	-	-	18.0
2025 Safenlp 2024	676	UNSAT	7.20	8.00	6.64	11.7	1.70	-	18.0
2025 Safenlp 2024	677	SAT	6.78	6.18	6.06	11.2	1.24	-	✗
2025 Safenlp 2024	678	SAT	6.80	8.05	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	679	SAT	6.79	6.32	6.10	12.2	1.24	-	17.9
2025 Safenlp 2024	680	SAT	6.37	5.97	6.00	12.2	1.07	15.2	17.8
2025 Safenlp 2024	681	SAT	6.83	6.57	6.06	12.2	1.26	-	18.0
2025 Safenlp 2024	682	SAT	6.86	8.03	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	683	SAT	6.61	8.01	6.08	12.2	1.25	-	✗
2025 Safenlp 2024	684	SAT	6.84	5.96	6.07	12.2	1.23	14.9	18.0
2025 Safenlp 2024	685	SAT	6.79	8.01	6.09	12.3	1.24	-	✗
2025 Safenlp 2024	686	SAT	6.84	8.58	6.09	29.3	-	-	✗
2025 Safenlp 2024	687	UNSAT	6.31	7.99	6.34	12.0	1.13	16.5	17.9
2025 Safenlp 2024	688	SAT	6.72	6.02	6.07	12.2	1.26	15.0	18.1
2025 Safenlp 2024	689	SAT	6.59	8.98	6.12	11.2	1.23	-	✗
2025 Safenlp 2024	690	UNSAT	8.00	51.4	-	-	-	-	17.8
2025 Safenlp 2024	691	UNSAT	7.44	8.13	13.6	20.0	7.89	-	17.8
2025 Safenlp 2024	692	SAT	6.84	8.98	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	693	SAT	6.77	9.01	6.11	12.2	1.24	-	✗
2025 Safenlp 2024	694	UNSAT	7.18	8.06	8.17	14.8	2.43	-	17.7
2025 Safenlp 2024	695	SAT	6.77	8.01	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	696	SAT	6.80	5.93	6.07	11.2	1.28	15.2	18.0
2025 Safenlp 2024	697	SAT	6.77	5.95	6.08	12.2	1.24	14.8	17.8
2025 Safenlp 2024	698	SAT	6.50	8.27	6.08	12.7	1.44	-	✗
2025 Safenlp 2024	699	SAT	6.73	8.04	6.11	12.3	1.23	-	-
2025 Safenlp 2024	700	SAT	6.77	8.55	6.10	14.3	1.98	-	✗
2025 Safenlp 2024	701	UNSAT	7.25	8.06	9.06	13.2	2.33	-	17.8
2025 Safenlp 2024	702	UNSAT	7.22	7.96	6.82	11.8	1.52	-	17.7
2025 Safenlp 2024	703	SAT	6.81	5.95	6.08	11.3	1.12	14.8	17.8
2025 Safenlp 2024	704	SAT	6.84	9.02	6.12	-	-	-	✗
2025 Safenlp 2024	705	UNSAT	7.30	8.13	19.9	15.0	3.44	-	17.7
2025 Safenlp 2024	706	SAT	6.85	9.05	6.10	12.2	1.28	-	✗
2025 Safenlp 2024	707	SAT	6.58	8.08	6.12	12.2	1.30	-	✗
2025 Safenlp 2024	708	SAT	6.59	7.98	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	709	UNSAT	8.36	8.92	-	-	-	-	17.9
2025 Safenlp 2024	710	SAT	6.77	7.97	6.13	12.2	1.24	-	✗
2025 Safenlp 2024	711	UNSAT	7.10	8.29	20.1	14.2	5.75	-	17.9
2025 Safenlp 2024	712	UNSAT	8.09	42.1	-	-	-	-	17.8
2025 Safenlp 2024	713	SAT	6.80	8.04	6.10	12.0	1.23	-	✗
2025 Safenlp 2024	714	SAT	6.75	8.02	6.09	12.2	1.30	-	✗
2025 Safenlp 2024	715	UNSAT	7.24	8.09	9.76	14.5	2.10	-	17.7
2025 Safenlp 2024	716	SAT	6.79	8.97	6.10	12.3	1.29	-	✗
2025 Safenlp 2024	717	SAT	6.82	8.10	6.07	12.2	1.28	-	✗
2025 Safenlp 2024	718	UNSAT	6.27	7.99	6.39	12.0	1.07	16.8	17.9
2025 Safenlp 2024	719	SAT	6.78	7.87	6.12	11.2	1.24	14.8	18.2
2025 Safenlp 2024	720	SAT	6.75	9.31	6.11	12.8	1.61	-	✗
2025 Safenlp 2024	721	SAT	6.63	8.90	6.09	12.2	1.26	-	✗
2025 Safenlp 2024	722	SAT	6.77	9.02	6.12	12.2	1.31	-	✗
2025 Safenlp 2024	723	UNSAT	9.17	25.7	-	-	-	-	18.1
2025 Safenlp 2024	724	SAT	6.66	8.94	6.12	11.2	1.25	-	✗
2025 Safenlp 2024	725	SAT	6.69	5.98	6.08	12.2	1.24	14.9	18.3
2025 Safenlp 2024	726	SAT	6.78	5.94	6.04	12.2	1.24	14.8	17.8
2025 Safenlp 2024	727	UNSAT	7.53	11.3	-	-	-	-	17.7

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	728	SAT	6.81	5.97	6.10	12.2	1.24	15.3	18.3
2025 Safenlp 2024	729	SAT	6.61	8.98	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	730	SAT	6.56	6.00	6.05	11.2	1.24	14.9	18.2
2025 Safenlp 2024	731	SAT	6.56	6.01	6.08	12.2	1.26	14.8	17.9
2025 Safenlp 2024	732	UNSAT	7.30	8.16	12.3	14.8	2.41	-	17.7
2025 Safenlp 2024	733	UNSAT	7.26	8.05	11.5	15.0	2.78	-	17.9
2025 Safenlp 2024	734	UNSAT	7.15	7.92	6.85	12.7	1.34	-	18.0
2025 Safenlp 2024	735	SAT	6.82	8.00	6.12	12.3	1.21	-	✗
2025 Safenlp 2024	736	SAT	6.83	8.05	6.16	12.2	1.27	-	✗
2025 Safenlp 2024	737	SAT	6.81	8.98	6.10	11.7	1.42	-	✗
2025 Safenlp 2024	738	UNSAT	6.32	7.94	6.38	12.0	1.07	16.6	18.0
2025 Safenlp 2024	739	SAT	6.64	8.02	6.09	12.3	1.23	-	✗
2025 Safenlp 2024	740	SAT	6.70	9.02	6.10	12.2	1.26	-	✗
2025 Safenlp 2024	741	SAT	6.83	8.98	6.13	12.2	1.23	-	✗
2025 Safenlp 2024	742	UNSAT	7.67	8.40	23.8	21.8	-	-	18.0
2025 Safenlp 2024	743	SAT	6.72	5.95	6.06	11.3	1.25	15.1	17.9
2025 Safenlp 2024	744	SAT	6.64	8.01	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	745	SAT	6.77	6.02	6.09	12.2	1.22	-	17.9
2025 Safenlp 2024	746	UNSAT	13.7	24.4	-	-	-	-	18.2
2025 Safenlp 2024	747	SAT	6.81	5.96	6.04	12.2	1.26	15.4	17.9
2025 Safenlp 2024	748	SAT	6.60	8.98	6.09	11.2	1.23	-	✗
2025 Safenlp 2024	749	SAT	6.50	6.07	6.14	11.2	1.22	15.0	17.8
2025 Safenlp 2024	750	SAT	6.54	5.98	6.07	12.2	1.25	14.9	18.3
2025 Safenlp 2024	751	SAT	6.79	6.04	6.05	11.3	1.23	15.0	17.9
2025 Safenlp 2024	752	SAT	6.88	7.98	6.10	11.2	1.23	-	-
2025 Safenlp 2024	753	UNSAT	7.04	8.02	10.4	13.1	2.18	-	17.8
2025 Safenlp 2024	754	SAT	6.71	8.96	6.11	12.2	1.24	-	✗
2025 Safenlp 2024	755	SAT	6.76	7.96	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	756	SAT	6.83	7.12	6.09	11.2	1.25	-	✗
2025 Safenlp 2024	757	UNSAT	6.29	7.97	6.39	11.9	1.13	16.5	17.7
2025 Safenlp 2024	758	UNSAT	6.31	7.94	6.35	12.0	1.07	16.5	-
2025 Safenlp 2024	759	SAT	6.80	6.50	6.09	11.2	1.23	-	✗
2025 Safenlp 2024	760	SAT	6.85	7.98	6.10	11.3	1.24	-	✗
2025 Safenlp 2024	761	UNSAT	6.31	7.94	6.38	12.5	1.08	16.4	17.7
2025 Safenlp 2024	762	UNSAT	7.45	8.27	-	18.5	18.2	-	17.8
2025 Safenlp 2024	763	UNSAT	7.02	7.96	6.63	12.4	1.33	-	17.9
2025 Safenlp 2024	764	UNSAT	7.34	8.18	-	14.8	5.04	-	17.9
2025 Safenlp 2024	765	UNSAT	7.12	8.00	10.3	13.5	3.55	-	17.9
2025 Safenlp 2024	766	UNSAT	6.28	7.96	6.44	11.4	1.09	16.7	17.9
2025 Safenlp 2024	767	UNSAT	7.03	7.99	6.54	12.5	1.30	-	17.8
2025 Safenlp 2024	768	SAT	6.83	6.79	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	769	SAT	6.82	8.15	6.09	13.6	1.45	-	✗
2025 Safenlp 2024	770	SAT	6.74	7.99	6.10	12.2	1.25	14.8	18.4
2025 Safenlp 2024	771	SAT	6.62	5.98	6.12	12.2	1.24	-	17.9
2025 Safenlp 2024	772	UNSAT	7.35	8.02	7.95	12.7	2.01	-	17.6
2025 Safenlp 2024	773	SAT	6.66	7.96	6.08	12.2	1.23	-	✗
2025 Safenlp 2024	774	UNSAT	8.75	13.9	-	-	-	-	17.7
2025 Safenlp 2024	775	UNSAT	7.03	8.02	7.04	12.7	1.28	-	17.8
2025 Safenlp 2024	776	UNSAT	6.28	7.90	6.37	12.0	1.07	16.5	18.5
2025 Safenlp 2024	777	SAT	6.79	7.96	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	778	SAT	6.52	8.00	6.08	12.2	1.28	-	✗
2025 Safenlp 2024	779	SAT	6.54	8.11	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	780	SAT	6.87	6.54	6.08	12.2	1.27	-	✗
2025 Safenlp 2024	781	UNSAT	7.79	8.37	-	-	15.9	-	17.8
2025 Safenlp 2024	782	UNSAT	7.07	8.03	13.0	12.8	3.15	-	17.5
2025 Safenlp 2024	783	UNSAT	6.28	7.96	6.38	11.9	1.07	16.6	19.1
2025 Safenlp 2024	784	UNSAT	6.33	7.93	6.33	11.9	1.08	16.7	-
2025 Safenlp 2024	785	SAT	6.85	8.99	6.12	11.7	1.27	-	✗
2025 Safenlp 2024	786	SAT	6.83	8.96	6.08	12.2	1.24	-	✗
2025 Safenlp 2024	787	UNSAT	6.29	7.86	6.36	11.0	1.08	16.4	17.3
2025 Safenlp 2024	788	SAT	6.79	6.03	6.10	12.2	1.24	14.8	18.1
2025 Safenlp 2024	789	UNSAT	6.27	7.91	6.49	12.5	1.07	16.7	17.5
2025 Safenlp 2024	790	UNSAT	7.70	19.7	-	-	-	-	19.4
2025 Safenlp 2024	791	UNSAT	7.10	8.13	15.9	19.8	3.56	-	17.3
2025 Safenlp 2024	792	SAT	6.85	8.93	6.08	12.2	1.25	-	✗
2025 Safenlp 2024	793	UNSAT	6.25	7.97	6.37	12.0	1.07	16.6	17.6
2025 Safenlp 2024	794	UNSAT	6.30	7.95	6.37	12.0	1.07	16.4	17.6
2025 Safenlp 2024	795	UNSAT	6.25	7.95	6.39	12.0	1.08	16.6	17.8

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	796	SAT	6.60	6.02	6.12	11.2	1.24	14.8	17.7
2025 Safenlp 2024	797	SAT	6.82	5.99	6.05	12.2	1.24	14.9	19.5
2025 Safenlp 2024	798	UNSAT	7.24	8.16	17.1	14.8	4.22	-	17.8
2025 Safenlp 2024	799	SAT	6.78	6.31	6.10	12.2	1.29	15.1	17.8
2025 Safenlp 2024	800	UNSAT	6.24	7.99	6.41	12.5	1.07	16.8	17.5
2025 Safenlp 2024	801	SAT	6.69	5.95	6.04	12.2	1.24	15.0	17.8
2025 Safenlp 2024	802	SAT	6.84	7.96	6.08	11.3	1.24	-	✗
2025 Safenlp 2024	803	UNSAT	7.26	7.94	6.63	12.7	1.30	-	17.7
2025 Safenlp 2024	804	UNSAT	7.20	7.93	9.90	13.8	2.17	-	17.8
2025 Safenlp 2024	805	SAT	6.81	7.99	6.09	11.2	1.23	-	✗
2025 Safenlp 2024	806	SAT	6.85	8.01	6.08	12.2	1.25	-	✗
2025 Safenlp 2024	807	SAT	6.86	8.01	6.10	12.2	1.26	-	✗
2025 Safenlp 2024	808	SAT	6.83	5.99	6.06	12.3	1.07	15.0	17.6
2025 Safenlp 2024	809	UNSAT	6.31	7.96	6.36	11.0	1.07	16.4	-
2025 Safenlp 2024	810	UNSAT	7.04	8.06	9.54	13.3	2.06	-	17.5
2025 Safenlp 2024	811	UNSAT	7.96	-	-	-	-	-	17.7
2025 Safenlp 2024	812	SAT	6.81	6.02	6.05	11.2	1.24	14.9	-
2025 Safenlp 2024	813	SAT	6.69	7.95	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	814	SAT	6.78	5.98	6.01	11.3	1.07	15.0	17.6
2025 Safenlp 2024	815	SAT	6.80	5.95	6.11	12.2	1.24	15.1	17.8
2025 Safenlp 2024	816	SAT	6.50	5.95	6.03	12.2	1.10	14.9	17.7
2025 Safenlp 2024	817	SAT	6.60	9.09	6.09	15.3	-	-	✗
2025 Safenlp 2024	818	UNSAT	8.07	12.3	-	-	-	-	17.9
2025 Safenlp 2024	819	SAT	6.78	5.95	6.09	12.2	1.25	14.8	18.2
2025 Safenlp 2024	820	UNSAT	15.4	-	-	-	-	-	17.8
2025 Safenlp 2024	821	UNSAT	8.80	-	-	-	-	-	17.8
2025 Safenlp 2024	822	SAT	6.96	6.96	6.10	12.2	1.25	-	18.2
2025 Safenlp 2024	823	UNSAT	8.33	8.57	-	-	-	-	18.2
2025 Safenlp 2024	824	UNSAT	7.26	8.36	-	14.2	11.1	-	17.8
2025 Safenlp 2024	825	SAT	6.78	8.01	6.14	12.2	1.25	-	✗
2025 Safenlp 2024	826	SAT	6.77	6.00	6.08	12.2	1.25	15.1	-
2025 Safenlp 2024	827	SAT	6.79	8.99	6.11	12.9	-	-	✗
2025 Safenlp 2024	828	UNSAT	7.13	8.19	19.5	15.0	7.11	-	18.3
2025 Safenlp 2024	829	SAT	6.79	8.06	6.08	12.2	1.24	-	✗
2025 Safenlp 2024	830	SAT	6.66	5.94	6.04	12.3	1.29	14.9	17.9
2025 Safenlp 2024	831	UNSAT	7.85	8.47	-	-	-	-	17.9
2025 Safenlp 2024	832	SAT	6.62	6.08	6.07	12.2	1.27	-	-
2025 Safenlp 2024	833	UNSAT	6.28	7.90	6.37	12.0	1.10	16.6	17.6
2025 Safenlp 2024	834	SAT	6.82	7.97	6.12	11.2	1.23	-	✗
2025 Safenlp 2024	835	SAT	6.80	7.99	6.08	12.2	1.26	-	✗
2025 Safenlp 2024	836	UNSAT	6.24	7.92	6.35	11.0	1.08	16.6	17.8
2025 Safenlp 2024	837	SAT	6.71	9.22	6.12	-	-	-	✗
2025 Safenlp 2024	838	SAT	6.68	8.97	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	839	UNSAT	7.26	8.11	-	15.8	-	-	17.6
2025 Safenlp 2024	840	SAT	6.84	7.90	6.10	11.2	1.27	-	✗
2025 Safenlp 2024	841	SAT	6.80	8.02	6.09	11.2	1.23	-	✗
2025 Safenlp 2024	842	SAT	6.75	5.99	6.09	12.3	1.25	14.7	18.0
2025 Safenlp 2024	843	SAT	6.69	5.97	6.05	12.2	1.25	14.9	17.8
2025 Safenlp 2024	844	UNSAT	13.3	38.1	-	-	-	-	18.0
2025 Safenlp 2024	845	UNSAT	7.28	8.00	7.39	13.6	2.09	-	17.5
2025 Safenlp 2024	846	SAT	6.88	9.21	6.07	14.5	2.11	-	✗
2025 Safenlp 2024	847	SAT	6.57	5.97	6.10	11.2	1.22	15.3	17.7
2025 Safenlp 2024	848	SAT	6.71	7.97	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	849	UNSAT	7.70	8.44	21.8	-	-	-	17.8
2025 Safenlp 2024	850	SAT	6.85	8.87	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	851	SAT	6.60	7.96	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	852	UNSAT	7.40	8.12	11.5	14.0	2.76	-	17.5
2025 Safenlp 2024	853	SAT	6.89	6.57	6.09	12.2	1.22	-	17.9
2025 Safenlp 2024	854	SAT	6.67	8.01	6.08	12.2	1.22	-	✗
2025 Safenlp 2024	855	UNSAT	6.22	7.95	6.37	11.0	1.08	16.5	17.5
2025 Safenlp 2024	856	SAT	6.90	7.54	6.12	12.2	1.26	-	✗
2025 Safenlp 2024	857	UNSAT	7.21	7.98	7.01	12.8	1.75	-	17.7
2025 Safenlp 2024	858	UNSAT	11.9	34.8	-	-	-	-	17.8
2025 Safenlp 2024	859	SAT	6.80	9.27	6.12	13.2	1.60	-	✗
2025 Safenlp 2024	860	SAT	6.61	7.98	6.11	11.1	1.24	-	✗
2025 Safenlp 2024	861	UNSAT	7.55	8.65	-	-	20.3	-	17.7
2025 Safenlp 2024	862	UNSAT	7.18	8.17	22.8	26.5	4.09	-	17.7
2025 Safenlp 2024	863	SAT	6.82	7.78	6.11	11.2	1.26	14.9	18.2

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	864	UNSAT	7.39	8.07	9.97	13.7	2.18	-	-
2025 Safenlp 2024	865	SAT	6.68	5.97	6.07	12.2	1.23	-	-
2025 Safenlp 2024	866	SAT	6.65	8.03	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	867	UNSAT	6.32	7.92	6.37	12.0	1.12	16.4	17.5
2025 Safenlp 2024	868	UNSAT	6.38	7.97	6.44	12.7	1.08	16.7	17.6
2025 Safenlp 2024	869	UNSAT	7.28	8.23	24.2	-	3.06	-	17.8
2025 Safenlp 2024	870	SAT	6.74	8.00	6.11	11.2	1.25	-	✗
2025 Safenlp 2024	871	UNSAT	7.28	8.02	9.36	13.4	3.68	-	19.3
2025 Safenlp 2024	872	UNSAT	7.65	8.48	-	-	15.7	-	17.8
2025 Safenlp 2024	873	UNSAT	6.26	7.95	6.37	12.0	1.13	16.5	17.8
2025 Safenlp 2024	874	SAT	6.78	5.95	6.05	11.2	1.23	14.9	17.8
2025 Safenlp 2024	875	SAT	6.53	8.97	6.11	11.7	1.71	-	✗
2025 Safenlp 2024	876	UNSAT	6.27	7.96	6.34	10.9	1.08	16.7	17.6
2025 Safenlp 2024	877	SAT	6.76	7.88	6.14	12.2	1.25	-	✗
2025 Safenlp 2024	878	SAT	6.80	7.99	6.08	12.2	1.25	-	✗
2025 Safenlp 2024	879	SAT	6.83	5.94	6.07	12.2	1.22	14.8	17.7
2025 Safenlp 2024	880	UNSAT	6.27	7.89	6.35	12.0	1.09	16.3	17.5
2025 Safenlp 2024	881	SAT	6.61	5.99	6.04	12.2	1.25	14.9	17.9
2025 Safenlp 2024	882	SAT	6.85	8.00	6.11	12.2	1.24	-	✗
2025 Safenlp 2024	883	UNSAT	8.66	9.20	-	-	-	-	18.0
2025 Safenlp 2024	884	UNSAT	6.30	7.92	6.35	11.0	1.08	16.5	19.2
2025 Safenlp 2024	885	SAT	6.82	9.21	6.08	14.0	2.00	-	✗
2025 Safenlp 2024	886	SAT	6.87	8.00	6.14	11.8	1.24	-	✗
2025 Safenlp 2024	887	SAT	6.82	8.93	6.06	12.2	1.24	-	✗
2025 Safenlp 2024	888	SAT	6.84	8.00	6.08	12.3	1.32	-	✗
2025 Safenlp 2024	889	SAT	6.71	5.96	6.06	12.2	1.28	15.3	17.9
2025 Safenlp 2024	890	UNSAT	7.75	8.42	-	24.3	-	-	19.3
2025 Safenlp 2024	891	SAT	6.65	7.98	6.12	12.3	1.23	-	-
2025 Safenlp 2024	892	SAT	6.64	5.99	6.11	12.3	1.24	14.8	17.8
2025 Safenlp 2024	893	UNSAT	6.40	7.94	6.36	12.0	1.07	16.3	18.0
2025 Safenlp 2024	894	SAT	6.76	6.03	6.10	11.2	1.24	14.9	-
2025 Safenlp 2024	895	SAT	6.81	5.99	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	896	SAT	6.95	6.00	6.07	11.3	1.27	-	18.1
2025 Safenlp 2024	897	UNSAT	7.26	8.25	18.1	-	-	-	17.8
2025 Safenlp 2024	898	UNSAT	7.10	8.03	6.62	11.5	1.27	-	17.6
2025 Safenlp 2024	899	SAT	6.47	5.92	6.05	11.2	1.12	15.0	19.2
2025 Safenlp 2024	900	SAT	6.77	5.93	6.03	12.2	1.24	14.8	17.9
2025 Safenlp 2024	901	SAT	6.83	8.02	6.07	13.5	1.25	-	✗
2025 Safenlp 2024	902	SAT	6.80	8.00	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	903	SAT	6.79	5.96	6.12	11.2	1.25	15.1	18.1
2025 Safenlp 2024	904	UNSAT	13.1	-	-	-	-	-	17.5
2025 Safenlp 2024	905	UNSAT	6.28	8.05	6.39	11.9	1.07	16.4	17.4
2025 Safenlp 2024	906	SAT	6.57	6.10	6.09	12.2	1.30	-	17.8
2025 Safenlp 2024	907	SAT	6.79	5.96	6.04	12.1	1.09	14.9	17.7
2025 Safenlp 2024	908	UNSAT	6.44	7.89	6.50	11.8	1.07	16.6	17.5
2025 Safenlp 2024	909	UNSAT	8.29	9.31	-	-	-	-	17.7
2025 Safenlp 2024	910	UNSAT	7.26	8.07	15.5	13.6	3.77	-	17.6
2025 Safenlp 2024	911	SAT	6.64	8.98	6.09	11.2	1.23	-	✗
2025 Safenlp 2024	912	UNSAT	6.30	7.93	6.40	12.0	1.08	17.1	17.8
2025 Safenlp 2024	913	UNSAT	7.06	7.97	7.79	13.2	1.83	-	17.5
2025 Safenlp 2024	914	UNSAT	6.29	7.96	6.36	12.0	1.07	16.5	17.6
2025 Safenlp 2024	915	SAT	6.83	7.88	6.08	12.2	1.24	-	✗
2025 Safenlp 2024	916	SAT	6.71	5.98	6.03	12.2	1.23	14.8	19.2
2025 Safenlp 2024	917	SAT	6.84	8.01	6.11	12.2	1.24	-	-
2025 Safenlp 2024	918	SAT	6.77	8.95	6.09	11.2	1.26	-	✗
2025 Safenlp 2024	919	UNSAT	6.30	7.94	6.37	12.0	1.07	16.6	17.5
2025 Safenlp 2024	920	SAT	6.74	7.88	6.12	11.2	1.23	-	✗
2025 Safenlp 2024	921	UNSAT	6.26	7.93	6.38	11.9	1.07	16.7	19.2
2025 Safenlp 2024	922	SAT	6.67	8.96	6.08	11.2	1.25	-	✗
2025 Safenlp 2024	923	SAT	6.50	5.96	6.03	11.2	1.23	-	17.6
2025 Safenlp 2024	924	SAT	6.60	7.98	6.12	12.2	1.39	-	✗
2025 Safenlp 2024	925	UNSAT	7.90	11.7	-	-	-	-	17.8
2025 Safenlp 2024	926	SAT	6.58	8.01	6.09	11.2	1.26	-	✗
2025 Safenlp 2024	927	SAT	7.71	9.64	6.10	13.0	-	-	✗
2025 Safenlp 2024	928	SAT	6.71	5.98	6.05	12.3	1.25	14.9	17.9
2025 Safenlp 2024	929	SAT	6.73	8.89	6.09	12.2	1.22	-	✗
2025 Safenlp 2024	930	UNSAT	7.73	8.37	-	-	-	-	19.1
2025 Safenlp 2024	931	UNSAT	11.4	19.3	-	-	-	-	18.1

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	932	SAT	6.81	6.01	6.06	12.2	1.26	15.0	18.0
2025 Safenlp 2024	933	UNSAT	7.28	8.00	6.56	12.4	1.47	-	17.5
2025 Safenlp 2024	934	SAT	6.81	6.19	6.09	12.2	1.26	-	✗
2025 Safenlp 2024	935	SAT	6.80	5.99	6.05	12.2	1.27	14.9	18.0
2025 Safenlp 2024	936	UNSAT	8.38	9.47	-	-	-	-	17.7
2025 Safenlp 2024	937	SAT	6.87	6.34	6.09	12.2	1.23	-	17.8
2025 Safenlp 2024	938	UNSAT	6.30	7.89	6.36	12.0	1.08	16.6	17.4
2025 Safenlp 2024	939	SAT	6.76	6.01	6.06	11.2	1.31	15.0	17.9
2025 Safenlp 2024	940	UNSAT	6.25	7.96	6.37	11.0	1.07	16.8	17.4
2025 Safenlp 2024	941	UNSAT	9.49	27.0	-	-	-	-	17.8
2025 Safenlp 2024	942	SAT	6.81	8.02	6.09	12.7	1.25	-	✗
2025 Safenlp 2024	943	SAT	6.61	8.21	6.12	12.8	2.44	-	✗
2025 Safenlp 2024	944	UNSAT	7.49	8.91	-	-	-	-	17.8
2025 Safenlp 2024	945	SAT	6.81	-	6.09	12.2	1.30	-	✗
2025 Safenlp 2024	946	SAT	6.71	5.95	6.05	12.2	1.23	14.9	17.8
2025 Safenlp 2024	947	SAT	6.50	5.92	6.06	12.2	1.24	14.8	17.7
2025 Safenlp 2024	948	SAT	6.52	5.97	6.03	12.2	1.26	14.9	18.0
2025 Safenlp 2024	949	SAT	6.87	7.96	6.09	12.2	1.84	-	✗
2025 Safenlp 2024	950	SAT	6.83	9.03	6.12	12.5	1.24	-	✗
2025 Safenlp 2024	951	SAT	6.70	9.01	6.10	13.1	1.80	-	✗
2025 Safenlp 2024	952	SAT	6.68	8.17	6.08	13.5	2.23	-	✗
2025 Safenlp 2024	953	SAT	6.85	9.20	6.11	12.5	1.47	-	✗
2025 Safenlp 2024	954	UNSAT	7.37	8.08	10.5	13.3	2.09	-	17.5
2025 Safenlp 2024	955	UNSAT	7.19	8.01	7.08	12.0	1.93	-	17.5
2025 Safenlp 2024	956	UNSAT	6.24	7.99	6.35	11.9	1.07	16.3	19.0
2025 Safenlp 2024	957	SAT	6.84	7.97	6.14	12.2	1.26	-	✗
2025 Safenlp 2024	958	UNSAT	6.35	7.97	6.37	12.0	1.07	16.9	18.1
2025 Safenlp 2024	959	SAT	6.56	7.96	6.10	12.2	1.26	-	✗
2025 Safenlp 2024	960	SAT	6.61	6.36	6.13	12.2	1.23	-	-
2025 Safenlp 2024	961	UNSAT	6.32	7.94	6.40	12.0	1.07	16.5	17.7
2025 Safenlp 2024	962	UNSAT	6.23	7.93	6.39	11.0	1.07	16.5	17.6
2025 Safenlp 2024	963	SAT	6.81	8.20	6.12	12.7	1.24	-	✗
2025 Safenlp 2024	964	SAT	6.83	8.97	6.12	16.5	-	-	✗
2025 Safenlp 2024	965	UNSAT	6.31	7.96	6.38	12.0	1.08	16.7	17.6
2025 Safenlp 2024	966	SAT	6.53	7.99	6.09	12.2	1.27	-	✗
2025 Safenlp 2024	967	SAT	6.86	8.12	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	968	UNSAT	7.62	8.33	-	-	-	-	17.8
2025 Safenlp 2024	969	UNSAT	7.09	8.05	7.11	13.5	1.77	-	17.7
2025 Safenlp 2024	970	SAT	6.81	8.03	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	971	SAT	6.90	8.07	6.08	12.2	1.25	-	-
2025 Safenlp 2024	972	SAT	6.88	7.93	6.11	11.5	1.25	-	✗
2025 Safenlp 2024	973	SAT	6.80	7.21	6.09	12.2	1.25	-	17.6
2025 Safenlp 2024	974	SAT	6.63	7.89	6.13	11.2	1.26	14.7	18.1
2025 Safenlp 2024	975	SAT	6.81	8.97	6.11	12.3	1.28	-	✗
2025 Safenlp 2024	976	UNSAT	7.30	8.02	10.1	13.5	2.24	-	18.2
2025 Safenlp 2024	977	UNSAT	7.41	8.11	14.6	16.5	3.01	-	17.7
2025 Safenlp 2024	978	SAT	6.82	8.94	6.11	12.1	1.24	-	✗
2025 Safenlp 2024	979	SAT	6.87	8.00	6.08	11.2	1.24	-	✗
2025 Safenlp 2024	980	SAT	6.71	7.99	6.12	12.8	1.59	-	✗
2025 Safenlp 2024	981	SAT	6.75	9.09	6.10	11.2	1.43	-	✗
2025 Safenlp 2024	982	SAT	6.74	7.80	6.09	12.2	1.23	-	✗
2025 Safenlp 2024	983	UNSAT	6.32	7.91	6.35	12.0	1.08	16.7	17.6
2025 Safenlp 2024	984	UNSAT	6.31	7.95	6.39	12.0	1.10	16.3	17.5
2025 Safenlp 2024	985	SAT	6.74	8.98	6.09	12.2	1.31	-	✗
2025 Safenlp 2024	986	SAT	6.62	8.00	6.11	11.7	1.24	-	✗
2025 Safenlp 2024	987	SAT	6.52	8.98	6.09	12.2	1.28	-	-
2025 Safenlp 2024	988	SAT	6.56	8.00	6.11	12.2	1.25	-	✗
2025 Safenlp 2024	989	UNSAT	7.26	7.98	7.80	13.3	2.27	-	17.7
2025 Safenlp 2024	990	SAT	7.03	8.99	6.08	12.3	1.23	-	✗
2025 Safenlp 2024	991	SAT	6.81	9.02	6.10	12.2	1.25	-	✗
2025 Safenlp 2024	992	UNSAT	7.27	8.03	9.21	14.3	1.78	-	-
2025 Safenlp 2024	993	SAT	6.50	5.96	6.06	12.2	1.23	15.0	17.6
2025 Safenlp 2024	994	UNSAT	6.31	7.90	6.37	12.0	1.08	16.7	17.6
2025 Safenlp 2024	995	SAT	6.83	8.00	6.11	12.7	1.43	-	✗
2025 Safenlp 2024	996	UNSAT	6.28	7.98	6.39	11.9	1.09	16.4	17.6
2025 Safenlp 2024	997	SAT	6.59	9.07	6.11	12.4	1.76	-	✗
2025 Safenlp 2024	998	SAT	6.81	8.09	6.11	12.2	1.24	-	✗
2025 Safenlp 2024	999	SAT	6.65	8.00	6.14	12.7	1.29	-	✗

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	1000	SAT	6.47	5.96	6.08	12.2	1.27	14.9	19.2
2025 Safenlp 2024	1001	UNSAT	6.27	7.93	6.36	11.0	1.13	16.7	17.7
2025 Safenlp 2024	1002	SAT	6.65	8.94	6.11	11.6	1.26	-	✗
2025 Safenlp 2024	1003	SAT	6.68	8.04	6.11	12.2	1.27	-	✗
2025 Safenlp 2024	1004	UNSAT	6.34	7.95	6.39	12.0	1.08	16.6	17.5
2025 Safenlp 2024	1005	SAT	6.62	8.95	6.11	12.4	1.23	-	✗
2025 Safenlp 2024	1006	SAT	6.68	8.11	6.09	12.9	1.98	-	✗
2025 Safenlp 2024	1007	SAT	6.82	8.92	6.10	12.2	1.31	-	✗
2025 Safenlp 2024	1008	SAT	6.74	8.03	6.11	12.7	1.24	-	-
2025 Safenlp 2024	1009	SAT	6.84	8.90	6.09	11.2	1.27	-	17.8
2025 Safenlp 2024	1010	UNSAT	6.36	7.89	6.39	11.9	1.07	16.5	17.6
2025 Safenlp 2024	1011	UNSAT	7.19	8.27	-	16.5	19.3	-	17.8
2025 Safenlp 2024	1012	SAT	6.80	8.96	6.11	12.2	1.22	-	✗
2025 Safenlp 2024	1013	SAT	6.80	7.99	6.10	12.2	1.26	-	✗
2025 Safenlp 2024	1014	SAT	6.82	7.95	6.09	12.2	1.24	-	✗
2025 Safenlp 2024	1015	UNSAT	7.36	8.04	17.4	14.3	13.8	-	17.8
2025 Safenlp 2024	1016	SAT	6.64	7.96	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	1017	SAT	6.71	7.30	6.06	11.2	1.23	-	✗
2025 Safenlp 2024	1018	SAT	6.80	6.27	6.08	12.3	1.27	-	18.0
2025 Safenlp 2024	1019	SAT	6.84	7.97	6.06	12.2	1.24	-	✗
2025 Safenlp 2024	1020	UNSAT	7.39	8.02	7.73	13.8	2.16	-	17.6
2025 Safenlp 2024	1021	SAT	6.57	9.03	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	1022	SAT	6.68	8.01	6.09	13.0	1.26	-	✗
2025 Safenlp 2024	1023	UNSAT	7.25	8.04	6.66	12.7	1.28	-	17.7
2025 Safenlp 2024	1024	SAT	6.55	5.95	6.06	12.2	1.23	15.1	17.8
2025 Safenlp 2024	1025	UNSAT	7.09	8.00	6.60	12.7	1.28	-	19.5
2025 Safenlp 2024	1026	UNSAT	7.20	8.27	13.1	14.2	2.94	-	17.8
2025 Safenlp 2024	1027	SAT	6.76	7.98	6.09	11.3	1.25	-	✗
2025 Safenlp 2024	1028	SAT	6.78	7.94	6.11	11.2	1.25	-	✗
2025 Safenlp 2024	1029	SAT	6.77	6.02	6.16	11.1	1.28	15.1	17.9
2025 Safenlp 2024	1030	UNSAT	7.12	7.97	6.65	12.5	1.29	-	17.6
2025 Safenlp 2024	1031	UNSAT	7.02	7.99	7.19	13.0	1.89	-	17.4
2025 Safenlp 2024	1032	SAT	6.68	8.96	6.10	12.2	1.23	-	✗
2025 Safenlp 2024	1033	SAT	6.59	8.99	6.12	12.2	1.24	-	-
2025 Safenlp 2024	1034	UNSAT	6.27	7.88	6.36	11.9	1.08	16.9	19.5
2025 Safenlp 2024	1035	UNSAT	7.45	8.57	-	29.1	14.3	-	17.7
2025 Safenlp 2024	1036	UNSAT	6.30	7.90	6.38	10.9	1.08	16.6	17.8
2025 Safenlp 2024	1037	UNSAT	6.24	7.92	6.38	12.0	1.07	16.4	17.5
2025 Safenlp 2024	1038	UNSAT	7.62	9.76	-	-	-	-	19.2
2025 Safenlp 2024	1039	SAT	6.65	8.02	6.09	11.2	1.27	-	✗
2025 Safenlp 2024	1040	SAT	6.65	8.96	6.07	12.5	1.37	-	✗
2025 Safenlp 2024	1041	SAT	6.78	8.97	6.08	12.2	1.24	14.8	17.8
2025 Safenlp 2024	1042	SAT	6.70	5.95	6.04	12.2	1.25	14.8	17.9
2025 Safenlp 2024	1043	SAT	6.84	9.01	6.14	12.2	1.22	-	✗
2025 Safenlp 2024	1044	UNSAT	7.05	7.99	8.54	12.8	1.96	-	17.5
2025 Safenlp 2024	1045	SAT	6.78	8.90	6.06	12.3	1.24	-	✗
2025 Safenlp 2024	1046	UNSAT	7.32	8.02	6.87	12.9	1.74	-	17.6
2025 Safenlp 2024	1047	SAT	6.75	6.50	6.10	12.3	1.24	-	19.3
2025 Safenlp 2024	1048	UNSAT	7.74	8.96	-	-	-	-	17.6
2025 Safenlp 2024	1049	SAT	6.75	5.96	6.08	12.2	1.24	-	17.8
2025 Safenlp 2024	1050	SAT	6.82	7.98	6.10	11.2	1.23	-	✗
2025 Safenlp 2024	1051	SAT	6.81	7.14	6.11	11.3	1.25	-	17.9
2025 Safenlp 2024	1052	SAT	6.78	6.10	6.12	12.3	1.25	-	18.0
2025 Safenlp 2024	1053	UNSAT	6.27	7.93	6.37	11.0	1.07	16.4	17.6
2025 Safenlp 2024	1054	SAT	6.76	7.97	6.09	12.2	1.26	14.8	18.2
2025 Safenlp 2024	1055	SAT	6.62	6.06	6.08	12.2	1.26	14.9	17.9
2025 Safenlp 2024	1056	SAT	6.61	6.06	6.11	11.3	1.24	-	17.8
2025 Safenlp 2024	1057	SAT	6.78	8.93	6.10	13.5	1.42	-	✗
2025 Safenlp 2024	1058	UNSAT	7.19	8.28	20.3	21.0	19.4	-	18.4
2025 Safenlp 2024	1059	SAT	6.71	7.99	6.10	12.2	1.28	-	✗
2025 Safenlp 2024	1060	SAT	6.58	9.00	6.10	12.3	1.23	-	✗
2025 Safenlp 2024	1061	SAT	6.74	9.20	6.07	12.5	1.70	-	✗
2025 Safenlp 2024	1062	SAT	6.83	7.98	6.10	12.3	1.24	-	✗
2025 Safenlp 2024	1063	UNSAT	6.29	7.99	6.37	10.9	1.07	16.7	17.5
2025 Safenlp 2024	1064	SAT	6.79	7.93	6.06	12.2	1.25	-	✗
2025 Safenlp 2024	1065	UNSAT	7.30	7.98	7.15	12.7	1.51	-	17.6
2025 Safenlp 2024	1066	SAT	6.67	8.92	6.12	12.2	1.24	-	✗
2025 Safenlp 2024	1067	SAT	6.48	6.24	6.08	12.2	1.23	-	17.7

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Safenlp 2024	1068	UNSAT	6.27	7.93	6.36	10.9	1.07	16.5	17.8
2025 Safenlp 2024	1069	SAT	6.82	8.01	6.09	11.2	1.22	-	✗
2025 Safenlp 2024	1070	SAT	6.67	6.11	6.02	12.2	1.26	15.0	17.8
2025 Safenlp 2024	1071	UNSAT	7.74	8.53	-	-	-	-	17.9
2025 Safenlp 2024	1072	SAT	6.77	5.95	6.05	12.2	1.25	15.2	17.8
2025 Safenlp 2024	1073	SAT	6.79	8.13	6.11	12.2	1.25	-	✗
2025 Safenlp 2024	1074	SAT	6.78	5.93	6.02	12.2	1.26	15.0	18.3
2025 Safenlp 2024	1075	SAT	6.79	8.99	6.07	11.2	1.25	-	✗
2025 Safenlp 2024	1076	SAT	6.60	8.95	6.09	12.2	1.25	-	✗
2025 Safenlp 2024	1077	SAT	6.65	6.03	6.10	12.2	1.24	-	18.3
2025 Safenlp 2024	1078	UNSAT	6.95	7.88	6.76	12.7	1.38	-	17.6
2025 Safenlp 2024	1079	SAT	6.77	8.84	6.10	12.1	1.23	-	✗
2025 Sat Relu	0	SAT	6.09	8.74	6.13	12.2	1.12	-	-
2025 Sat Relu	1	UNSAT	6.76	16.3	-	12.0	-	-	-
2025 Sat Relu	2	SAT	6.07	8.62	6.18	12.1	2.50	14.6	✗
2025 Sat Relu	3	UNSAT	6.60	16.4	-	13.5	-	-	-
2025 Sat Relu	4	SAT	6.10	8.68	6.22	12.2	-	-	✗
2025 Sat Relu	5	UNSAT	6.69	16.4	-	13.5	-	-	-
2025 Sat Relu	6	SAT	5.99	8.57	6.14	12.7	1.10	14.6	17.5
2025 Sat Relu	7	UNSAT	6.53	16.2	23.2	13.2	1.74	-	-
2025 Sat Relu	8	SAT	6.09	8.84	6.29	11.2	-	-	✗
2025 Sat Relu	9	UNSAT	6.64	16.5	-	12.5	-	-	-
2025 Sat Relu	10	SAT	6.04	8.65	6.14	12.7	1.07	-	✗
2025 Sat Relu	11	UNSAT	6.46	16.2	7.61	12.7	1.11	96.9	-
2025 Sat Relu	12	SAT	6.08	8.69	6.15	12.7	1.08	-	✗
2025 Sat Relu	13	UNSAT	6.71	16.2	7.52	12.8	1.11	97.4	-
2025 Sat Relu	14	SAT	6.09	8.64	6.35	12.2	-	-	✗
2025 Sat Relu	15	UNSAT	6.80	16.5	-	13.0	-	-	-
2025 Sat Relu	16	SAT	6.07	8.71	6.18	11.2	2.32	-	✗
2025 Sat Relu	17	UNSAT	6.58	16.4	-	13.5	-	-	-
2025 Sat Relu	18	SAT	5.99	8.56	6.16	11.7	1.10	14.6	19.3
2025 Sat Relu	19	UNSAT	6.59	16.3	-	13.0	-	-	-
2025 Sat Relu	20	SAT	6.05	8.69	6.20	12.2	4.21	14.4	23.3
2025 Sat Relu	21	UNSAT	6.62	16.4	-	13.0	-	-	-
2025 Sat Relu	22	SAT	6.07	8.64	6.23	12.3	2.94	-	✗
2025 Sat Relu	23	UNSAT	6.63	16.4	-	13.5	-	-	-
2025 Sat Relu	24	SAT	6.10	8.69	6.12	12.7	1.09	-	✗
2025 Sat Relu	25	UNSAT	6.78	16.4	-	12.1	11.0	-	-
2025 Sat Relu	26	SAT	6.08	8.57	6.19	12.2	-	-	✗
2025 Sat Relu	27	UNSAT	6.68	16.5	-	13.3	-	-	-
2025 Sat Relu	28	SAT	6.06	12.4	6.30	12.2	-	-	✗
2025 Sat Relu	29	UNSAT	6.72	16.5	-	13.7	-	-	-
2025 Sat Relu	30	SAT	6.03	8.70	6.10	12.2	1.09	14.7	21.2
2025 Sat Relu	31	UNSAT	6.52	16.4	-	13.0	-	-	-
2025 Sat Relu	32	SAT	6.10	8.70	6.20	12.2	-	-	-
2025 Sat Relu	33	UNSAT	6.64	16.5	-	12.6	-	-	-
2025 Sat Relu	34	SAT	6.11	8.74	6.16	12.2	1.90	-	✗
2025 Sat Relu	35	UNSAT	6.65	16.5	-	13.2	-	-	-
2025 Sat Relu	36	SAT	6.04	12.3	6.18	12.7	1.57	15.2	✗
2025 Sat Relu	37	UNSAT	6.91	16.5	-	13.3	-	-	-
2025 Sat Relu	38	SAT	6.00	8.70	6.15	12.2	1.14	14.7	21.7
2025 Sat Relu	39	UNSAT	6.70	16.7	-	13.0	-	-	-
2025 Sat Relu	40	SAT	6.06	8.84	6.15	12.2	2.03	-	✗
2025 Sat Relu	41	UNSAT	6.60	16.4	-	13.2	-	-	-
2025 Sat Relu	42	SAT	6.07	8.88	6.21	11.7	4.12	-	✗
2025 Sat Relu	43	UNSAT	6.61	16.5	-	13.5	-	-	-
2025 Sat Relu	44	SAT	6.06	8.67	6.14	12.7	1.07	-	✗
2025 Sat Relu	45	UNSAT	6.46	16.2	8.25	13.0	1.36	-	-
2025 Sat Relu	46	SAT	6.06	8.72	6.18	12.3	-	-	-
2025 Sat Relu	47	UNSAT	6.65	16.4	-	13.6	-	-	-
2025 Sat Relu	48	SAT	6.02	8.86	6.20	11.7	-	14.3	26.5
2025 Sat Relu	49	UNSAT	6.92	16.4	-	13.4	-	-	-
2025 Sat Relu	50	SAT	6.05	8.73	6.17	12.2	1.80	14.9	✗
2025 Sat Relu	51	UNSAT	6.63	16.5	-	13.3	-	-	-
2025 Sat Relu	52	SAT	6.09	8.67	6.11	12.3	1.08	-	✗
2025 Sat Relu	53	UNSAT	6.45	16.2	6.81	12.7	1.25	-	-
2025 Sat Relu	54	SAT	6.07	8.58	6.14	12.2	1.11	-	✗
2025 Sat Relu	55	UNSAT	6.47	16.2	7.31	12.7	1.20	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Sat Relu	56	SAT	6.03	8.70	6.25	12.2	4.49	14.7	22.2
2025 Sat Relu	57	UNSAT	6.63	16.4	-	12.3	-	-	-
2025 Sat Relu	58	SAT	6.06	8.73	6.26	12.3	-	-	✗
2025 Sat Relu	59	UNSAT	6.68	16.5	-	13.5	-	-	-
2025 Sat Relu	60	SAT	6.08	8.56	6.16	12.3	1.22	-	✗
2025 Sat Relu	61	UNSAT	6.84	16.5	-	12.3	-	-	-
2025 Sat Relu	62	SAT	6.07	8.73	6.36	12.2	-	-	✗
2025 Sat Relu	63	UNSAT	6.78	16.6	-	13.8	-	-	-
2025 Sat Relu	64	SAT	6.11	8.61	6.36	12.2	-	-	✗
2025 Sat Relu	65	UNSAT	6.74	16.5	-	12.8	-	-	-
2025 Sat Relu	66	SAT	6.08	8.62	6.23	11.2	-	-	✗
2025 Sat Relu	67	UNSAT	6.61	16.4	-	13.6	-	-	-
2025 Sat Relu	68	SAT	6.03	8.71	6.13	12.2	1.08	14.2	✗
2025 Sat Relu	69	UNSAT	6.48	16.2	19.5	13.0	-	-	-
2025 Sat Relu	70	SAT	6.05	8.70	6.15	11.2	1.30	-	✗
2025 Sat Relu	71	UNSAT	6.70	16.4	-	13.3	-	-	-
2025 Sat Relu	72	SAT	6.07	8.70	6.19	12.2	-	-	✗
2025 Sat Relu	73	UNSAT	6.90	16.4	-	13.3	-	-	-
2025 Sat Relu	74	SAT	6.06	8.64	6.15	12.2	1.09	-	-
2025 Sat Relu	75	UNSAT	6.52	16.2	56.9	13.3	2.22	-	-
2025 Sat Relu	76	SAT	6.06	8.57	6.18	12.2	1.14	14.7	-
2025 Sat Relu	77	UNSAT	6.59	16.5	-	13.0	-	-	-
2025 Sat Relu	78	SAT	6.01	8.70	6.24	11.2	4.96	-	✗
2025 Sat Relu	79	UNSAT	6.62	16.4	-	13.8	-	-	-
2025 Sat Relu	80	SAT	6.12	8.68	6.17	12.2	1.75	-	✗
2025 Sat Relu	81	UNSAT	6.63	16.4	-	13.3	-	-	-
2025 Sat Relu	82	SAT	6.12	8.66	6.19	12.2	1.39	-	✗
2025 Sat Relu	83	UNSAT	6.60	16.6	-	13.3	-	-	-
2025 Sat Relu	84	SAT	6.08	12.5	6.31	11.2	-	-	✗
2025 Sat Relu	85	UNSAT	6.99	16.6	-	13.8	-	-	-
2025 Sat Relu	86	SAT	6.09	8.79	6.18	12.2	2.95	14.7	✗
2025 Sat Relu	87	UNSAT	6.61	16.4	-	12.4	-	-	-
2025 Sat Relu	88	SAT	6.05	8.68	6.18	12.2	10.6	14.9	30.1
2025 Sat Relu	89	UNSAT	6.70	16.5	-	13.3	-	-	-
2025 Sat Relu	90	SAT	6.09	8.66	6.23	11.3	3.43	-	✗
2025 Sat Relu	91	UNSAT	6.60	16.5	-	12.5	-	-	-
2025 Sat Relu	92	SAT	6.05	8.72	6.15	12.2	1.40	-	-
2025 Sat Relu	93	UNSAT	6.63	16.4	-	13.3	-	-	-
2025 Sat Relu	94	SAT	6.07	8.68	6.15	11.2	1.07	-	-
2025 Sat Relu	95	UNSAT	6.45	16.2	32.6	13.0	4.31	-	-
2025 Sat Relu	96	SAT	6.03	8.73	6.20	12.3	-	14.5	24.6
2025 Sat Relu	97	UNSAT	6.88	16.4	-	13.6	-	-	-
2025 Sat Relu	98	SAT	6.03	8.73	6.19	11.3	1.30	15.0	27.9
2025 Sat Relu	99	UNSAT	6.74	17.2	-	13.3	-	-	-
2025 Soundnessbench	0	SAT	106	✗	-	-	-	-	-
2025 Soundnessbench	1	SAT	99.1	9.69	-	-	-	-	-
2025 Soundnessbench	2	SAT	50.4	9.46	-	-	-	-	-
2025 Soundnessbench	3	SAT	50.4	9.25	-	-	-	-	-
2025 Soundnessbench	4	SAT	66.7	16.2	-	-	-	-	-
2025 Soundnessbench	5	SAT	105	✗	-	-	-	-	-
2025 Soundnessbench	6	SAT	106	✗	-	-	-	-	-
2025 Soundnessbench	7	SAT	37.8	9.82	-	-	-	-	-
2025 Soundnessbench	8	SAT	116	✗	-	✗	-	-	-
2025 Soundnessbench	9	SAT	104	10.1	-	-	-	-	-
2025 Soundnessbench	10	SAT	118	10.1	-	-	-	-	-
2025 Soundnessbench	11	SAT	49.0	9.34	-	-	-	-	-
2025 Soundnessbench	12	SAT	109	-	-	✗	-	-	-
2025 Soundnessbench	13	SAT	121	✗	-	-	-	-	-
2025 Soundnessbench	14	SAT	98.1	-	-	✗	-	-	-
2025 Soundnessbench	15	SAT	96.3	✗	-	-	-	-	-
2025 Soundnessbench	16	SAT	59.8	9.78	-	✗	-	-	-
2025 Soundnessbench	17	SAT	101	✗	-	-	-	-	-
2025 Soundnessbench	18	SAT	30.1	9.50	-	-	-	-	-
2025 Soundnessbench	19	SAT	34.3	-	-	-	-	-	-
2025 Soundnessbench	20	SAT	60.4	✗	-	-	-	-	-
2025 Soundnessbench	21	SAT	68.6	9.30	-	-	-	-	-
2025 Soundnessbench	22	SAT	125	9.30	-	-	-	-	-
2025 Soundnessbench	23	SAT	37.7	9.16	-	-	-	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Soundnessbench	24	SAT	108	9.64	-	-	-	-	-
2025 Soundnessbench	25	SAT	32.0	9.25	-	-	-	-	-
2025 Soundnessbench	26	SAT	107	11.1	-	✗	-	-	-
2025 Soundnessbench	27	SAT	77.3	11.0	-	✗	-	-	-
2025 Soundnessbench	28	SAT	53.9	9.19	-	-	-	-	-
2025 Soundnessbench	29	SAT	80.8	-	-	✗	-	-	-
2025 Soundnessbench	30	SAT	118	11.1	-	✗	-	-	-
2025 Soundnessbench	31	SAT	52.5	✗	-	✗	-	-	-
2025 Soundnessbench	32	SAT	29.7	9.42	-	-	-	-	-
2025 Soundnessbench	33	SAT	31.0	9.35	-	✗	-	-	-
2025 Soundnessbench	34	UNSAT	42.7	9.66	-	-	-	-	-
2025 Soundnessbench	35	SAT	82.3	9.52	-	-	-	-	-
2025 Soundnessbench	36	SAT	44.8	9.53	-	-	-	-	-
2025 Soundnessbench	37	SAT	96.8	-	-	✗	-	-	-
2025 Soundnessbench	38	SAT	118	✗	-	-	-	-	-
2025 Soundnessbench	39	SAT	70.3	11.2	-	✗	-	-	-
2025 Soundnessbench	40	SAT	72.9	9.37	-	✗	-	-	-
2025 Soundnessbench	41	SAT	38.3	9.36	-	-	-	-	-
2025 Soundnessbench	42	SAT	118	✗	-	-	-	-	-
2025 Soundnessbench	43	SAT	55.3	10.3	-	-	-	-	-
2025 Soundnessbench	44	SAT	121	✗	-	✗	-	-	-
2025 Soundnessbench	45	SAT	98.7	10.1	-	✗	-	-	-
2025 Soundnessbench	46	SAT	95.5	-	-	✗	-	-	-
2025 Soundnessbench	47	SAT	48.8	9.62	-	-	-	-	-
2025 Soundnessbench	48	SAT	82.8	-	-	✗	-	-	-
2025 Soundnessbench	49	SAT	101	-	-	✗	-	-	-
2025 Tinyimagenet 2024	0	UNSAT	14.8	54.9	70.5	-	-	-	-
2025 Tinyimagenet 2024	1	SAT	7.78	15.9	8.87	-	-	-	-
2025 Tinyimagenet 2024	2	UNSAT	25.5	-	-	-	-	-	-
2025 Tinyimagenet 2024	3	SAT	7.77	15.8	9.01	-	-	-	-
2025 Tinyimagenet 2024	4	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	5	UNSAT	15.3	39.5	18.9	-	-	-	-
2025 Tinyimagenet 2024	6	SAT	7.67	14.7	8.83	14.8	-	23.4	-
2025 Tinyimagenet 2024	7	SAT	7.85	16.1	9.07	-	-	-	-
2025 Tinyimagenet 2024	8	UNSAT	19.5	70.8	-	-	-	-	-
2025 Tinyimagenet 2024	9	UNSAT	9.87	31.5	14.0	-	-	-	-
2025 Tinyimagenet 2024	10	SAT	7.74	15.8	8.87	-	-	-	-
2025 Tinyimagenet 2024	11	UNSAT	15.8	45.0	102	-	-	-	-
2025 Tinyimagenet 2024	12	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	13	UNSAT	9.78	27.2	13.8	-	-	-	-
2025 Tinyimagenet 2024	14	UNSAT	10.2	28.4	14.6	-	-	-	-
2025 Tinyimagenet 2024	15	UNSAT	16.3	79.1	-	-	-	-	-
2025 Tinyimagenet 2024	16	UNSAT	17.9	-	-	-	-	-	-
2025 Tinyimagenet 2024	17	UNSAT	15.3	41.6	19.1	-	-	-	-
2025 Tinyimagenet 2024	18	UNSAT	14.3	65.3	18.1	-	-	-	-
2025 Tinyimagenet 2024	19	UNSAT	17.6	88.2	-	-	-	-	-
2025 Tinyimagenet 2024	20	UNSAT	21.7	-	-	-	-	-	-
2025 Tinyimagenet 2024	21	UNSAT	31.8	-	-	-	-	-	-
2025 Tinyimagenet 2024	22	UNSAT	36.7	-	-	-	-	-	-
2025 Tinyimagenet 2024	23	SAT	7.85	15.6	8.91	14.8	-	-	-
2025 Tinyimagenet 2024	24	UNSAT	17.8	70.2	-	-	-	-	-
2025 Tinyimagenet 2024	25	UNSAT	21.1	56.2	-	-	-	-	-
2025 Tinyimagenet 2024	26	UNSAT	34.4	-	-	-	-	-	-
2025 Tinyimagenet 2024	27	UNSAT	10.4	29.0	14.7	-	-	-	-
2025 Tinyimagenet 2024	28	UNSAT	20.6	61.6	-	-	-	-	-
2025 Tinyimagenet 2024	29	SAT	7.83	16.0	8.97	-	-	-	-
2025 Tinyimagenet 2024	30	UNSAT	14.7	52.4	45.0	-	-	-	-
2025 Tinyimagenet 2024	31	UNSAT	18.5	59.9	-	-	-	-	-
2025 Tinyimagenet 2024	32	SAT	7.77	15.8	9.07	-	-	-	-
2025 Tinyimagenet 2024	33	UNSAT	10.2	28.1	16.3	-	-	-	-
2025 Tinyimagenet 2024	34	UNSAT	58.5	-	-	-	-	-	-
2025 Tinyimagenet 2024	35	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	36	UNSAT	10.6	28.9	14.9	-	-	-	-
2025 Tinyimagenet 2024	37	UNSAT	21.2	78.4	-	-	-	-	-
2025 Tinyimagenet 2024	38	SAT	7.73	15.7	8.89	14.8	-	-	-
2025 Tinyimagenet 2024	39	UNSAT	19.7	59.4	-	-	-	-	-
2025 Tinyimagenet 2024	40	UNSAT	9.88	28.1	15.1	-	-	-	-
2025 Tinyimagenet 2024	41	UNSAT	23.0	71.4	-	-	-	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Tinyimagenet 2024	42	UNSAT	15.5	46.5	82.8	-	-	-	-
2025 Tinyimagenet 2024	43	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	44	UNSAT	9.74	27.1	13.0	-	-	-	-
2025 Tinyimagenet 2024	45	UNSAT	24.7	63.4	-	-	-	-	-
2025 Tinyimagenet 2024	46	SAT	7.76	16.0	9.06	-	-	-	-
2025 Tinyimagenet 2024	47	UNSAT	16.0	58.1	32.9	-	-	-	-
2025 Tinyimagenet 2024	48	UNSAT	17.4	48.5	-	-	-	-	-
2025 Tinyimagenet 2024	49	UNSAT	9.75	29.2	16.4	-	-	-	-
2025 Tinyimagenet 2024	50	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	51	UNSAT	16.8	101	-	-	-	-	-
2025 Tinyimagenet 2024	52	UNSAT	11.0	30.2	15.4	-	-	-	-
2025 Tinyimagenet 2024	53	SAT	7.72	15.6	8.96	-	-	-	-
2025 Tinyimagenet 2024	54	SAT	7.73	16.0	9.06	-	-	-	-
2025 Tinyimagenet 2024	55	UNSAT	17.8	48.7	75.5	-	-	-	-
2025 Tinyimagenet 2024	56	UNSAT	102	-	-	-	-	-	-
2025 Tinyimagenet 2024	57	UNSAT	14.5	43.0	30.0	-	-	-	-
2025 Tinyimagenet 2024	58	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	59	UNSAT	15.5	41.7	52.1	-	-	-	-
2025 Tinyimagenet 2024	60	SAT	7.81	15.6	8.97	-	-	-	-
2025 Tinyimagenet 2024	61	UNSAT	11.1	31.4	23.0	-	-	-	-
2025 Tinyimagenet 2024	62	SAT	7.70	15.7	8.92	14.8	-	-	-
2025 Tinyimagenet 2024	63	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	64	UNSAT	15.7	46.0	47.9	-	-	-	-
2025 Tinyimagenet 2024	65	SAT	7.72	15.9	8.99	-	-	-	-
2025 Tinyimagenet 2024	66	UNSAT	16.0	62.6	-	-	-	-	-
2025 Tinyimagenet 2024	67	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	68	UNSAT	7.53	24.4	13.7	-	-	-	-
2025 Tinyimagenet 2024	69	SAT	7.75	15.9	9.06	-	-	-	-
2025 Tinyimagenet 2024	70	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	71	UNSAT	10.4	29.2	15.6	-	-	-	-
2025 Tinyimagenet 2024	72	UNSAT	25.6	85.1	-	-	-	-	-
2025 Tinyimagenet 2024	73	SAT	7.76	16.2	8.92	-	-	-	-
2025 Tinyimagenet 2024	74	UNSAT	10.8	29.7	16.7	-	-	-	-
2025 Tinyimagenet 2024	75	UNSAT	16.3	40.6	21.2	-	-	-	-
2025 Tinyimagenet 2024	76	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	77	SAT	7.76	15.7	9.02	-	-	-	-
2025 Tinyimagenet 2024	78	UNSAT	17.6	55.6	-	-	-	-	-
2025 Tinyimagenet 2024	79	UNSAT	9.96	27.5	15.1	-	-	-	-
2025 Tinyimagenet 2024	80	UNSAT	22.5	92.5	-	-	-	-	-
2025 Tinyimagenet 2024	81	UNSAT	10.5	32.1	14.1	-	-	-	-
2025 Tinyimagenet 2024	82	UNSAT	16.1	45.3	21.9	-	-	-	-
2025 Tinyimagenet 2024	83	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	84	UNSAT	9.85	28.0	16.8	-	-	-	-
2025 Tinyimagenet 2024	85	SAT	7.77	15.8	8.96	-	-	-	-
2025 Tinyimagenet 2024	86	UNSAT	16.1	43.8	27.0	-	-	-	-
2025 Tinyimagenet 2024	87	SAT	7.76	15.7	8.95	-	-	-	-
2025 Tinyimagenet 2024	88	UNSAT	16.9	52.3	-	-	-	-	-
2025 Tinyimagenet 2024	89	UNSAT	17.7	51.7	-	-	-	-	-
2025 Tinyimagenet 2024	90	SAT	7.83	15.5	9.07	-	-	-	-
2025 Tinyimagenet 2024	91	UNSAT	16.6	95.6	-	-	-	-	-
2025 Tinyimagenet 2024	92	UNSAT	60.8	-	-	-	-	-	-
2025 Tinyimagenet 2024	93	SAT	7.69	28.9	-	-	-	-	-
2025 Tinyimagenet 2024	94	UNSAT	21.2	-	-	-	-	-	-
2025 Tinyimagenet 2024	95	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	96	UNSAT	15.3	46.9	30.2	-	-	-	-
2025 Tinyimagenet 2024	97	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	98	UNSAT	23.3	-	-	-	-	-	-
2025 Tinyimagenet 2024	99	UNSAT	9.97	28.0	13.4	-	-	-	-
2025 Tinyimagenet 2024	100	UNSAT	18.1	71.2	-	-	-	-	-
2025 Tinyimagenet 2024	101	UNSAT	21.4	69.1	-	-	-	-	-
2025 Tinyimagenet 2024	102	UNSAT	15.7	55.0	-	-	-	-	-
2025 Tinyimagenet 2024	103	SAT	7.88	15.9	8.93	14.9	-	-	-
2025 Tinyimagenet 2024	104	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	105	UNSAT	21.9	-	-	-	-	-	-
2025 Tinyimagenet 2024	106	UNSAT	15.0	42.8	38.0	-	-	-	-
2025 Tinyimagenet 2024	107	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	108	SAT	7.76	16.2	9.06	-	-	-	-
2025 Tinyimagenet 2024	109	UNSAT	18.7	53.1	-	-	-	-	-

Table 33: Instance Runtimes. Fastest times are blue. Second fastest are green. Penalties are red crosses (✗).

Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Tinyimagenet 2024	110	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	111	UNSAT	10.5	29.5	16.0	-	-	-	-
2025 Tinyimagenet 2024	112	UNSAT	16.8	46.2	-	-	-	-	-
2025 Tinyimagenet 2024	113	UNSAT	15.7	43.2	39.5	-	-	-	-
2025 Tinyimagenet 2024	114	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	115	UNSAT	16.5	49.9	21.0	-	-	-	-
2025 Tinyimagenet 2024	116	SAT	7.75	15.7	8.89	-	-	-	-
2025 Tinyimagenet 2024	117	UNSAT	16.2	40.9	75.5	-	-	-	-
2025 Tinyimagenet 2024	118	UNSAT	15.6	65.3	46.1	-	-	-	-
2025 Tinyimagenet 2024	119	UNSAT	16.4	52.9	-	-	-	-	-
2025 Tinyimagenet 2024	120	SAT	7.76	16.1	-	-	-	-	-
2025 Tinyimagenet 2024	121	UNSAT	11.2	31.3	22.4	-	-	-	-
2025 Tinyimagenet 2024	122	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	123	UNSAT	16.3	78.5	32.2	-	-	-	-
2025 Tinyimagenet 2024	124	UNSAT	10.1	27.8	15.1	-	-	-	-
2025 Tinyimagenet 2024	125	SAT	7.82	15.8	8.95	-	-	-	-
2025 Tinyimagenet 2024	126	UNSAT	14.4	35.5	26.8	-	-	-	-
2025 Tinyimagenet 2024	127	UNSAT	18.2	54.0	-	-	-	-	-
2025 Tinyimagenet 2024	128	UNSAT	19.1	76.2	-	-	-	-	-
2025 Tinyimagenet 2024	129	UNSAT	16.1	43.5	108	-	-	-	-
2025 Tinyimagenet 2024	130	UNSAT	17.1	70.9	-	-	-	-	-
2025 Tinyimagenet 2024	131	UNSAT	84.6	-	-	-	-	-	-
2025 Tinyimagenet 2024	132	UNSAT	16.9	51.6	55.2	-	-	-	-
2025 Tinyimagenet 2024	133	UNSAT	22.2	86.4	-	-	-	-	-
2025 Tinyimagenet 2024	134	UNSAT	20.9	65.1	-	-	-	-	-
2025 Tinyimagenet 2024	135	UNSAT	15.6	67.1	-	-	-	-	-
2025 Tinyimagenet 2024	136	UNSAT	15.5	40.7	21.7	-	-	-	-
2025 Tinyimagenet 2024	137	UNSAT	14.8	51.6	37.5	-	-	-	-
2025 Tinyimagenet 2024	138	UNSAT	17.2	69.8	-	-	-	-	-
2025 Tinyimagenet 2024	139	UNSAT	19.6	-	-	-	-	-	-
2025 Tinyimagenet 2024	140	UNSAT	16.5	59.8	28.2	-	-	-	-
2025 Tinyimagenet 2024	141	UNSAT	17.5	103	-	-	-	-	-
2025 Tinyimagenet 2024	142	UNSAT	19.1	-	-	-	-	-	-
2025 Tinyimagenet 2024	143	SAT	7.82	✗	-	-	-	-	-
2025 Tinyimagenet 2024	144	UNSAT	16.9	58.1	-	-	-	-	-
2025 Tinyimagenet 2024	145	UNSAT	28.8	89.7	-	-	-	-	-
2025 Tinyimagenet 2024	146	SAT	7.76	15.9	8.99	-	-	-	-
2025 Tinyimagenet 2024	147	UNSAT	25.1	-	-	-	-	-	-
2025 Tinyimagenet 2024	148	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	149	UNSAT	18.6	56.0	-	-	-	-	-
2025 Tinyimagenet 2024	150	SAT	7.76	17.5	9.14	-	-	-	-
2025 Tinyimagenet 2024	151	UNSAT	15.3	65.8	41.2	-	-	-	-
2025 Tinyimagenet 2024	152	UNSAT	31.0	-	-	-	-	-	-
2025 Tinyimagenet 2024	153	SAT	7.81	16.0	9.33	-	-	-	-
2025 Tinyimagenet 2024	154	UNSAT	16.9	70.7	-	-	-	-	-
2025 Tinyimagenet 2024	155	SAT	7.78	15.5	8.92	-	-	-	-
2025 Tinyimagenet 2024	156	UNSAT	19.9	95.7	-	-	-	-	-
2025 Tinyimagenet 2024	157	UNSAT	14.6	45.1	19.7	-	-	-	-
2025 Tinyimagenet 2024	158	UNSAT	17.5	59.3	-	-	-	-	-
2025 Tinyimagenet 2024	159	UNSAT	7.65	24.5	14.9	-	-	-	-
2025 Tinyimagenet 2024	160	UNSAT	9.95	27.5	14.4	-	-	-	-
2025 Tinyimagenet 2024	161	SAT	7.78	15.6	8.91	-	-	-	-
2025 Tinyimagenet 2024	162	UNSAT	16.3	46.6	41.9	-	-	-	-
2025 Tinyimagenet 2024	163	UNSAT	10.7	34.3	15.8	-	-	-	-
2025 Tinyimagenet 2024	164	SAT	7.81	16.1	8.95	-	-	-	-
2025 Tinyimagenet 2024	165	UNSAT	16.3	70.4	43.9	-	-	-	-
2025 Tinyimagenet 2024	166	UNSAT	16.1	58.5	41.6	-	-	-	-
2025 Tinyimagenet 2024	167	UNSAT	29.5	-	-	-	-	-	-
2025 Tinyimagenet 2024	168	UNSAT	15.0	42.6	39.9	-	-	-	-
2025 Tinyimagenet 2024	169	UNSAT	16.8	46.2	-	-	-	-	-
2025 Tinyimagenet 2024	170	UNSAT	10.8	29.9	15.2	-	-	-	-
2025 Tinyimagenet 2024	171	UNSAT	21.2	54.5	-	-	-	-	-
2025 Tinyimagenet 2024	172	UNSAT	10.0	30.5	13.7	-	-	-	-
2025 Tinyimagenet 2024	173	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	174	UNSAT	17.3	49.7	-	-	-	-	-
2025 Tinyimagenet 2024	175	UNSAT	22.1	64.8	-	-	-	-	-
2025 Tinyimagenet 2024	176	UNSAT	17.2	79.2	-	-	-	-	-
2025 Tinyimagenet 2024	177	UNSAT	10.0	28.1	13.4	-	-	-	-

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Category	Id	Result	α-β-C	NSAT	PyRAT	CORA	NNen	NNV	SB
2025 Tinyimagenet 2024	178	UNSAT	17.6	75.0	-	-	-	-	-
2025 Tinyimagenet 2024	179	UNSAT	18.3	97.6	-	-	-	-	-
2025 Tinyimagenet 2024	180	UNSAT	18.7	-	-	-	-	-	-
2025 Tinyimagenet 2024	181	SAT	7.69	15.7	8.91	-	-	-	-
2025 Tinyimagenet 2024	182	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	183	UNSAT	38.5	-	-	-	-	-	-
2025 Tinyimagenet 2024	184	UNSAT	20.3	-	-	-	-	-	-
2025 Tinyimagenet 2024	185	UNSAT	7.59	24.4	13.9	-	-	-	-
2025 Tinyimagenet 2024	186	UNSAT	15.6	65.0	46.8	-	-	-	-
2025 Tinyimagenet 2024	187	UNSAT	24.1	63.3	-	-	-	-	-
2025 Tinyimagenet 2024	188	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	189	SAT	7.79	15.7	9.05	-	-	-	-
2025 Tinyimagenet 2024	190	UNSAT	9.92	27.5	14.9	-	-	-	-
2025 Tinyimagenet 2024	191	UNSAT	16.7	48.5	77.4	-	-	-	-
2025 Tinyimagenet 2024	192	SAT	7.80	15.9	8.92	-	-	-	-
2025 Tinyimagenet 2024	193	SAT	7.75	16.4	9.12	-	-	-	-
2025 Tinyimagenet 2024	194	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	195	UNSAT	16.7	71.6	57.5	-	-	-	-
2025 Tinyimagenet 2024	196	UNSAT	14.6	38.8	30.5	-	-	-	-
2025 Tinyimagenet 2024	197	UNSAT	7.62	24.6	14.3	-	-	-	-
2025 Tinyimagenet 2024	198	?	-	-	-	-	-	-	-
2025 Tinyimagenet 2024	199	?	-	-	-	-	-	-	-
2025 Tllverifybench 2023	0	UNSAT	7.20	26.7	8.40	14.3	-	-	2.83
2025 Tllverifybench 2023	1	UNSAT	7.23	26.8	8.04	13.8	-	-	2.81
2025 Tllverifybench 2023	2	UNSAT	7.19	26.6	6.33	13.6	1.88	-	2.82
2025 Tllverifybench 2023	3	SAT	6.26	5.97	6.07	12.2	1.14	16.2	2.83
2025 Tllverifybench 2023	4	UNSAT	7.40	26.7	10.5	13.8	-	-	2.93
2025 Tllverifybench 2023	5	SAT	6.23	6.01	7.75	12.7	1.19	16.5	2.94
2025 Tllverifybench 2023	6	UNSAT	7.51	26.9	12.3	14.0	-	-	3.00
2025 Tllverifybench 2023	7	UNSAT	7.70	26.9	30.9	13.6	-	-	2.96
2025 Tllverifybench 2023	8	UNSAT	8.21	27.2	55.6	15.7	-	-	3.24
2025 Tllverifybench 2023	9	UNSAT	8.53	27.4	81.8	16.8	-	-	3.29
2025 Tllverifybench 2023	10	SAT	6.27	6.06	7.90	13.2	2.00	17.0	3.24
2025 Tllverifybench 2023	11	SAT	6.27	6.08	7.86	12.5	1.41	17.1	3.26
2025 Tllverifybench 2023	12	UNSAT	8.60	27.3	15.6	15.5	-	-	3.76
2025 Tllverifybench 2023	13	SAT	6.36	6.24	7.97	12.4	1.85	17.2	3.79
2025 Tllverifybench 2023	14	UNSAT	8.47	27.3	28.0	17.2	-	-	4.04
2025 Tllverifybench 2023	15	UNSAT	8.82	27.4	77.3	18.8	-	-	3.99
2025 Tllverifybench 2023	16	UNSAT	10.1	28.4	146	60.8	-	-	4.36
2025 Tllverifybench 2023	17	SAT	6.39	6.66	8.40	12.2	3.30	17.8	4.28
2025 Tllverifybench 2023	18	UNSAT	9.87	28.0	40.3	57.1	-	-	4.27
2025 Tllverifybench 2023	19	SAT	6.37	6.62	8.40	12.8	4.54	18.0	4.46
2025 Tllverifybench 2023	20	SAT	6.73	7.36	9.05	13.7	6.23	18.3	5.62
2025 Tllverifybench 2023	21	SAT	6.75	7.38	9.21	44.1	10.9	18.5	5.68
2025 Tllverifybench 2023	22	UNSAT	11.0	28.8	59.9	64.4	-	-	5.60
2025 Tllverifybench 2023	23	SAT	6.76	7.35	9.03	13.7	6.22	18.3	6.03
2025 Tllverifybench 2023	24	UNSAT	12.2	30.0	59.9	78.1	-	-	8.79
2025 Tllverifybench 2023	25	SAT	7.12	8.63	10.2	14.5	12.1	18.8	7.81
2025 Tllverifybench 2023	26	SAT	7.11	8.61	10.6	13.8	14.3	19.1	8.85
2025 Tllverifybench 2023	27	SAT	7.13	8.66	11.6	14.5	11.6	19.3	9.02
2025 Tllverifybench 2023	28	SAT	7.68	10.7	12.5	13.9	25.2	20.4	10.9
2025 Tllverifybench 2023	29	SAT	7.62	10.7	12.1	15.7	23.0	20.2	11.4
2025 Tllverifybench 2023	30	SAT	7.74	10.6	12.3	15.0	24.1	20.3	11.7
2025 Tllverifybench 2023	31	SAT	7.75	10.7	12.1	14.7	22.9	20.2	12.0