

Verified SAT Solver Competition

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December 6, 2018

Software Verification is Important!



- Testing cannot guarantee that your code is correct!
- With complete specifications we are sure that our code will always behave as intended!
- Some SAT solvers passed the 20 benchmarks but were found to be buggy afterwards!



Prizes



- Free food!

- Amazon vouchers!



- Free T-Shirts!



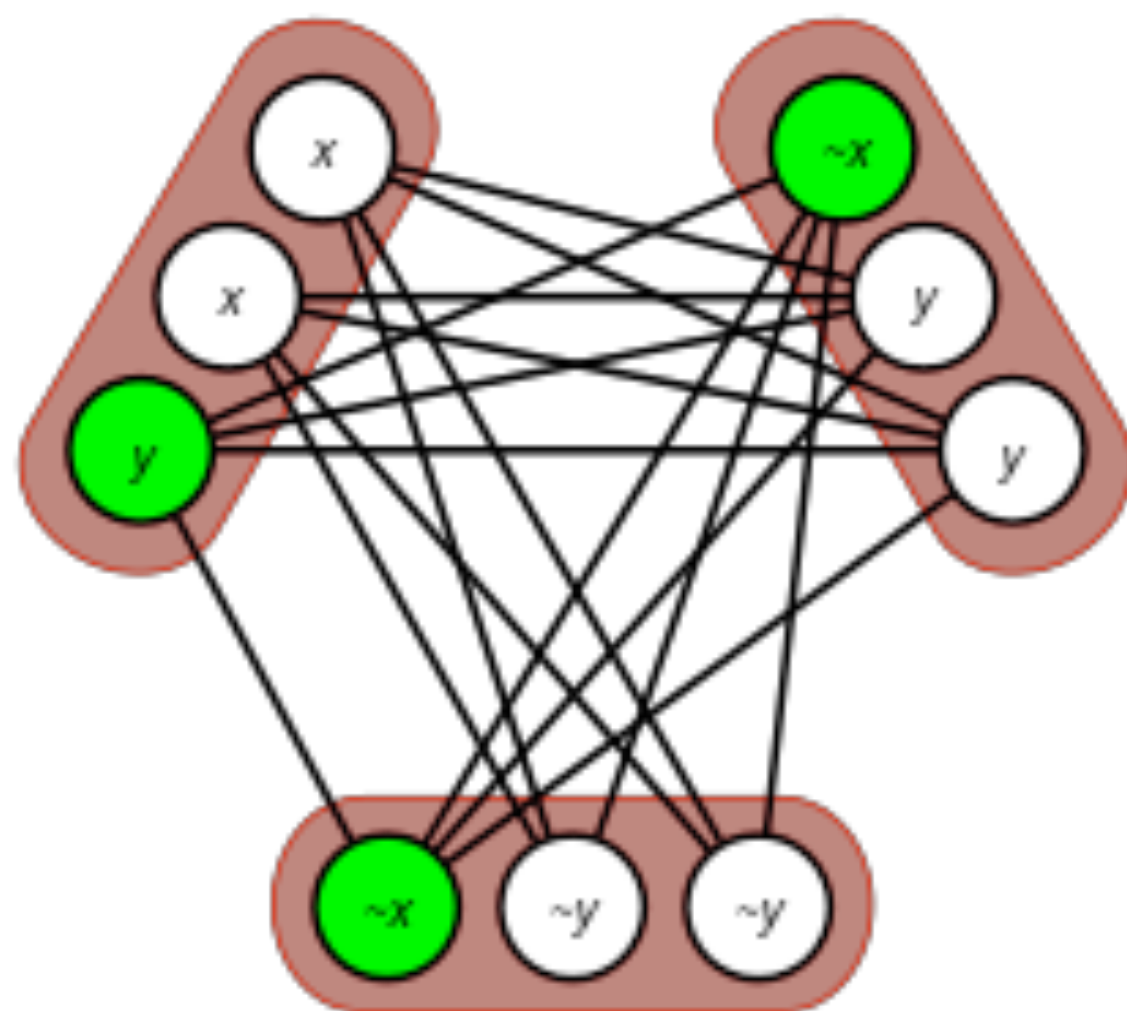
Participating Solvers!



Antlia
Aquarius
Aquila
Capricornus
Cassiopeia
Chamaeleon
Corvus
Dorado
Draco
Hydrus
Libra
Lupus
Sagittarius



Advance SAT Solving Techniques!



- 10 Solvers use the Pure literal rule!
- 3 Solvers use the Failed literal rule!
- 1 Solver uses Probing!
- 1 Solver uses special Data Structures!



Ranking: Unit Propagation

Solver	#Solved	Avg. Time (s)
Antlia	63	48.63
Hydrus	63	27.02
Lupus	62	36.37
Dorado	57	38.08
Chamaeleon	54	32.19
Aquarius	45	80.97

Ranking: Unit Propagation

Solver	#Solved	Avg. Time (s)
Capricornus	65	49.38
Aquila	64	51.19
Cassiopeia	64	52.36
Libra	63	47.31
Antlia	63	48.63
Hydrus	63	27.02
Lupus	62	36.37
Dorado	57	38.08
Chamaeleon	54	32.19
Aquarius	45	80.97

Ranking: Unit Propagation

Solver	#Solved	Avg. Time (s)
Corvus	65	49.20
Capricornus	65	49.38
Aquila	64	51.19
Cassiopeia	64	52.36
Libra	63	47.31
Antlia	63	48.63
Hydrus	63	27.02
Lupus	62	36.37
Dorado	57	38.08
Chamaeleon	54	32.19
Aquarius	45	80.97

Ranking: Unit Propagation

Solver	#Solved	Avg. Time (s)
Draco	65	41.36
Corvus	65	49.20
Capricornus	65	49.38
Aquila	64	51.19
Cassiopeia	64	52.36
Libra	63	47.31
Antlia	63	48.63
Hydrus	63	27.02
Lupus	62	36.37
Dorado	57	38.08
Chamaeleon	54	32.19
Aquarius	45	80.97

Ranking: Unit Propagation

Solver	#Solved	Avg. Time (s)
Sagittarius	73	45.26
Draco	65	41.36
Corvus	65	49.20
Capricornus	65	49.38
Aquila	64	51.19
Cassiopeia	64	52.36
Libra	63	47.31
Antlia	63	48.63
Hydrus	63	27.02
Lupus	62	36.37
Dorado	57	38.08
Chamaeleon	54	32.19
Aquarius	45	80.97

Ranking: Unit Propagation

Solver	#Solved	Avg. Time (s)
Sagittarius	73	45.26
Draco	65	41.36
Corvus	65	49.20
Capricornus	65	49.38
Aquila	64	51.19
Cassiopeia	64	52.36
Libra	63	47.31
Antlia	63	48.63
Hydrus	63	27.02
Lupus	62	36.37
Dorado	57	38.08
Chamaeleon	54	32.19
Aquarius	45	80.97

Ranking: Improvements

Solver	#Solved	Avg. Time (s)
Dorado	57	47.94
Chamaeleon	55	37.93
Aquarius	44	79.11

Ranking: Improvements

Solver	#Solved	Avg. Time (s)
Capricornus	65	50.87
Cassiopeia	63	47.84
Aquila	62	41.86
Lupus	59	28.36
Libra	58	52.85
Dorado	57	47.94
Chamaeleon	55	37.93
Aquarius	44	79.11

Ranking: Improvements

Solver	#Solved	Avg. Time (s)
Corvus	65	50.60
Capricornus	65	50.87
Cassiopeia	63	47.84
Aquila	62	41.86
Lupus	59	28.36
Libra	58	52.85
Dorado	57	47.94
Chamaeleon	55	37.93
Aquarius	44	79.11

Ranking: Improvements

Solver	#Solved	Avg. Time (s)
Sagittarius	68	40.57
Corvus	65	50.60
Capricornus	65	50.87
Cassiopeia	63	47.84
Aquila	62	41.86
Lupus	59	28.36
Libra	58	52.85
Dorado	57	47.94
Chamaeleon	55	37.93
Aquarius	44	79.11

Ranking: Improvements

Solver	#Solved	Avg. Time (s)
Draco	71	42.62
Sagittarius	68	40.57
Corvus	65	50.60
Capricornus	65	50.87
Cassiopeia	63	47.84
Aquila	62	41.86
Lupus	59	28.36
Libra	58	52.85
Dorado	57	47.94
Chamaeleon	55	37.93
Aquarius	44	79.11

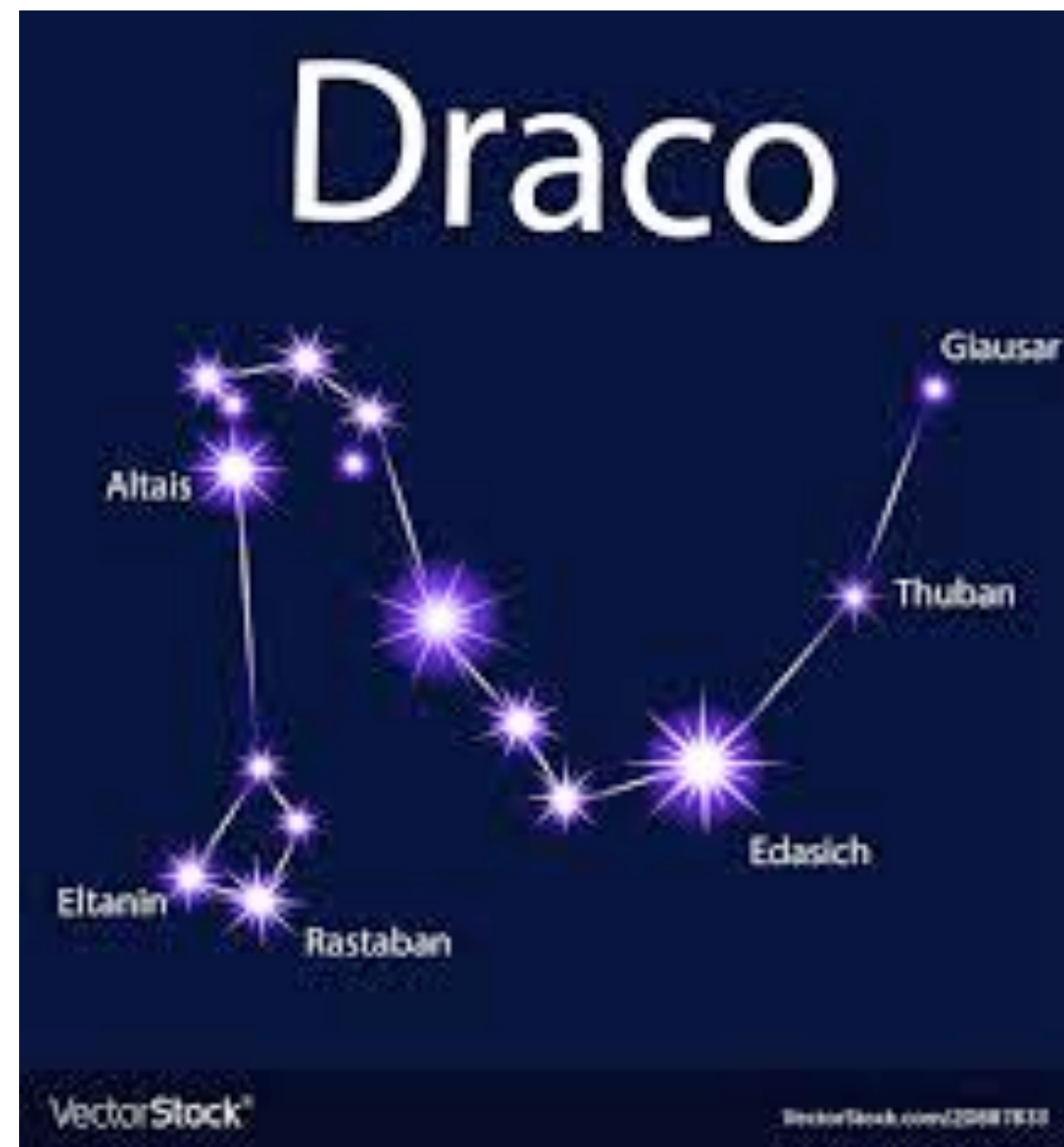
Winners!



- **Sagittarius (best unit-sat)**
 - Author: *Misha Ivkov*
 - Techniques: Failed literal rule



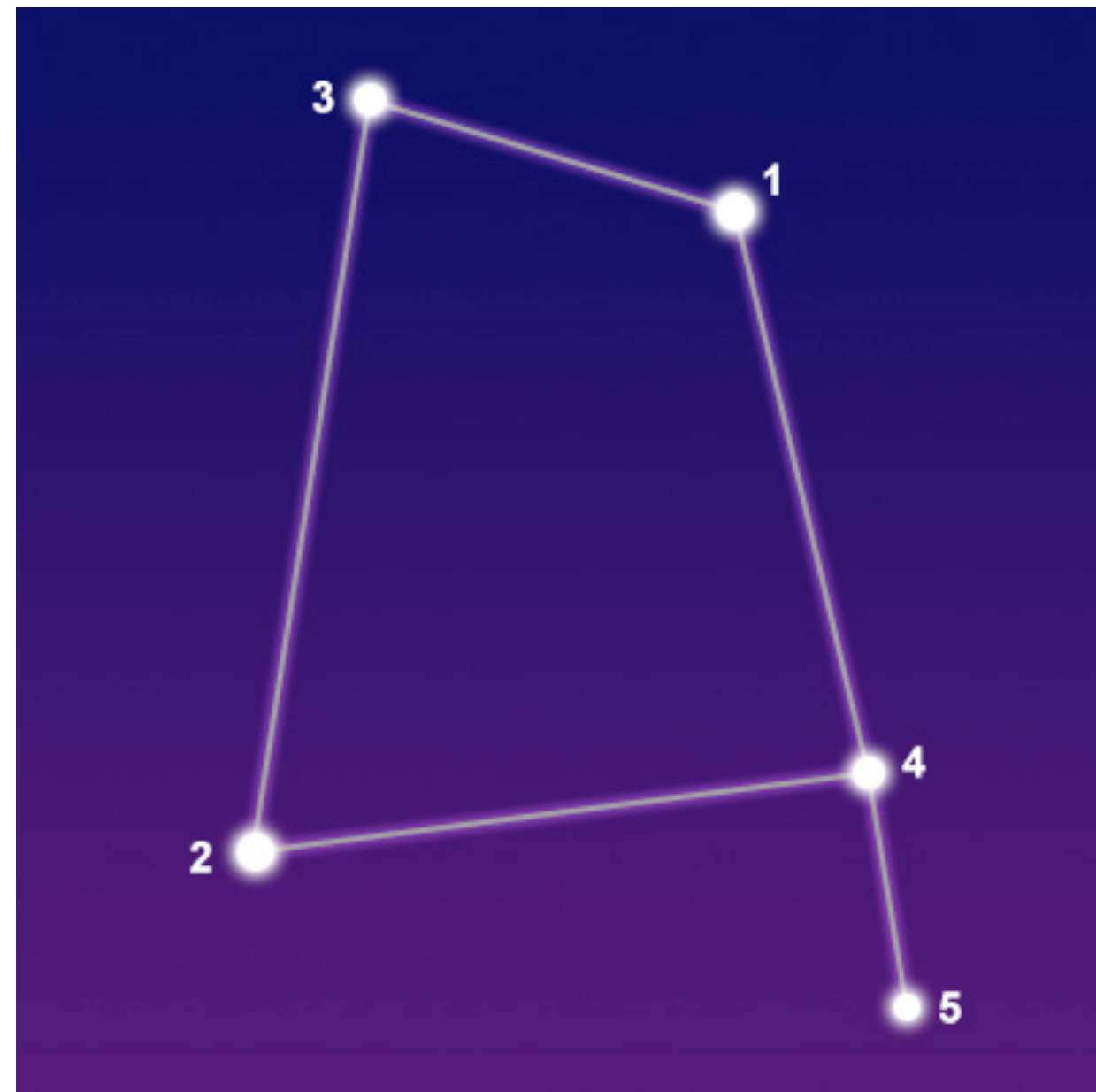
Winners!



- **Draco (best final-sat)**
 - Authors: *Kevin Geng & Lawrence Wang*
 - Techniques: Special data structures



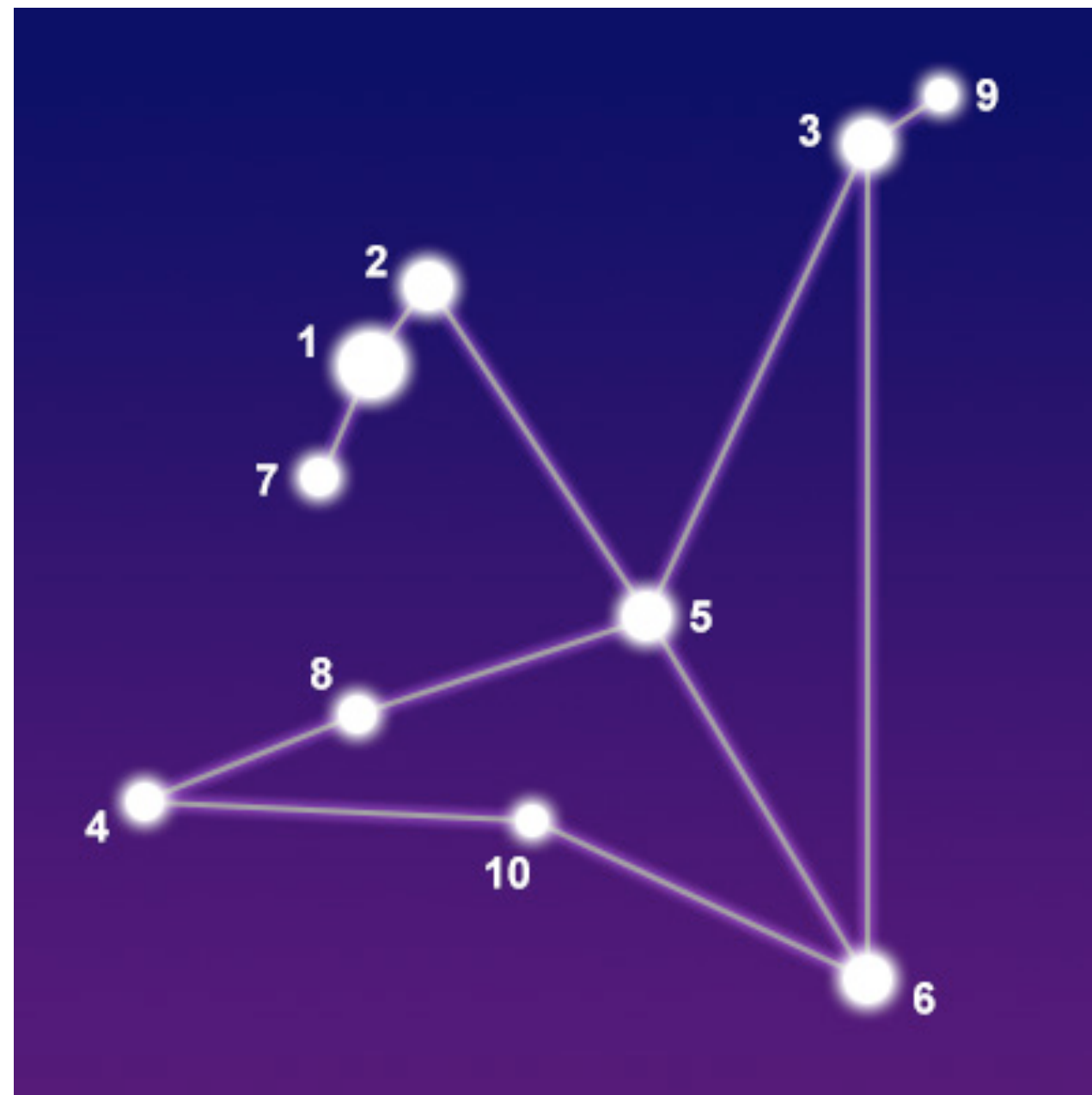
Winners!



- **Corvus (3rd place)**
 - Author: *Katia Villevald*
 - Techniques: Pure literal rule



Winners!



- **Aquila (verified)**
 - Author: Phillip Wang
 - Techniques: Failed literal rule



Winners!



- **Random winner!**
 - Jared Moore



Congratulations to Everyone!

- Awesome work everyone!
- Final: Monday, December 10, 2018 5.30pm - 8.30pm GHC 4215
- Don't forget to fill the Faculty Course Evaluation
 - Your feedback is very important to continue to improve the course!
- Student Evaluation of TA's:
 - <https://www.ugrad.cs.cmu.edu/ta/F18/feedback/>

