



The Results of the Model Counting Competition 2026

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SAT 2026 Conference, FLoC, Lisbon, Portugal

Motivation

Why having a solving competition?

Deepen **relationship** between latest **theoretical** and **practical** development on the various model counting problems and their practical **applications**.

Goals

- Gain visibility of model counting
- Foster progress and new solving approaches and ideas
- 7th iteration

Tracks / Problems

Input: Propositional formula F in CNF

(1) Model Counting

(1F) Model Counting (120 sec)

Task: Number of satisfying assignments to F .

Timelimit 120s

(2B) Weighted Model Counting

Input: F + weight for each literal in F

Task: Sum of weights of all models (weight product of the weights of its literals)

(3) Projected Model Counting

Input: F + set P of projection variables

Task: Projected model count of F (restrict model to “show” variables)

(4) Projected Weighted Model Counting

Input: F + set P of projection variables + weight for each literal in P

(5B) Algebraic Model Counting (Complex)

Input: F + weights as a complex number

Restrictions, Measure, and Ranking

Measure

- Solved instances in 1h limitation per instance (120s for 1F)
- No tie-breaking
- Warmup Barnard Cluster at HPC Dresden
- Final Cluster at CRIL, Lens (same as PB; by Olivier Russel)
- 32 GB main memory (RAM) per instance

Ranking

- (A) Arbitrary Precision (0% relative error; DQF > 0 wrong)
- (B) Small Precision Loss (0.1% relative error; DQF > 20 wrong)
- (C) Approximate Solving (0.8 approx factor; DQF > 20 wrong)
- (D) Heuristic Solving (20% error; 1 point for a correct count)

Evaluation Procedure

- Open call for benchmarks
- Evaluated submitted benchmark instances + known sets

We selected 200 instances and split them in public / private.

1. Public instances (100) and public challenge
Submission open for a few weeks.
2. Private instances (100)
After a final deadline, we evaluate solvers on the cluster.
If we see errors, we give authors a few days to comment or fix.
We included results of a fixed version if provided.

Participants

Exact

Track	Groups
MC	6 (+2 -2)
PMC	4 (+2 -1)
PWMC	3 (+4 -2)
AMC	2

1. Cara

2. D4

3. Ganak

4. gpmc

5. TiDiDi

Approximate

1. Ganak-Approx

Heuristic

1. CoinCount

Benchmark Selection (2026)

Selection

- Instances selected over all submitted/collected benchmarks
- Sample
 - c : number of submitted/collected sets (2020-2026)
 - $n = 200/c$ (number of instances by set)
 - pick a random order on sets
 - compute distribution, i.e, between $n-3$ and $n+3$ instances per set (3, number increases slightly to fill 200 instances)
 - randomly sample instances according to distribution

Submitted Benchmarks

Overview

- 49315 Instances, $\approx 19\text{GB}$
- Sets: MC(8), WMC(1*), WMC⁻(1), PMC(1), AMC(1)

Instance Sets

- *Lights Out Game* by A. Schidler; T. Faller; A. Biere
- *Software Feature Models* by C. Sundermann, S. Krieter, V. F. Brancaccio, Tobias Heß, E. Kuitert, T. Thüm
- *Linux Time Travel* by E. Kuitert, U.-B. Braun, T. Thüm, S. Krieter, G. Saake
- *Boolean Networks (Biological/Random)* by R. Higuchi, T. Soh, D. Le Berre, M. Magnin, M. Banbara, N. Tamura
- *Arithmetic Circuits* by S. Ramprasath; V. Vasudevan
- *Likely Molecular Mass* by S. Li; S. Cherif; C.-M. Li; A. Mentag; R. Dauwe; J. Zhang
- *Odd Cycle Transversal* by M. Bannach; M. Hecher
- *Efficient Cluster Scheduling* by J. Ehses; A. Schidler; A. Biere
- *DQMR Networks* by P. Illner
- *Quantum Circuits Operating Noise (WMC, AMC)* by D. Huybrechts; M. Bannach
- *Debug Failing Proof Search* by J. Lubin, M. Preigh, M. Willsey, S. E. Chasins

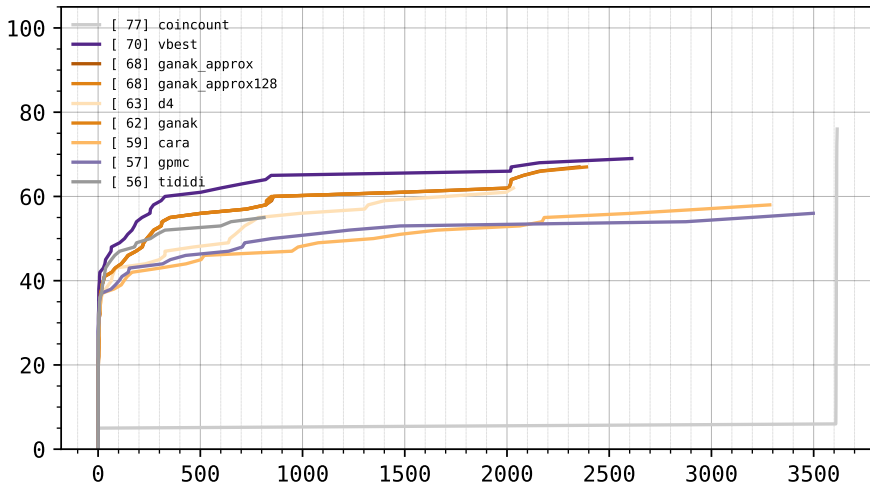
Thank You!

Track 1: Model Counting

0%	0.1%	0.8	Heu.	Counter	Author	Solved
			1	CoinCount ¹	Jiong Yang, Tim van Bremen, Kuldeep S. Meel	77
		1	2	Ganak-approx	Mate Soos, Kuldeep S. Meel, Jiong Yang	68
1	1	2	3	d4	Pierre Marquis, Jean-Marie Lagniez	63
2	2	3	4	Ganak	Mate Soos, Kuldeep S. Meel, Jiong Yang	62
3	3	4	5	Cara	Petr Illner	59
4	4	5	6	gpmc	Kenta Ito, Kenji Hashimoto	57
5	5	6	7	TiDiDi	Guy Van den Broeck, Florent Capelli	56

¹CoinCount is an approximate anytime solver, ranked in the heuristic category, due to missing guarantees.

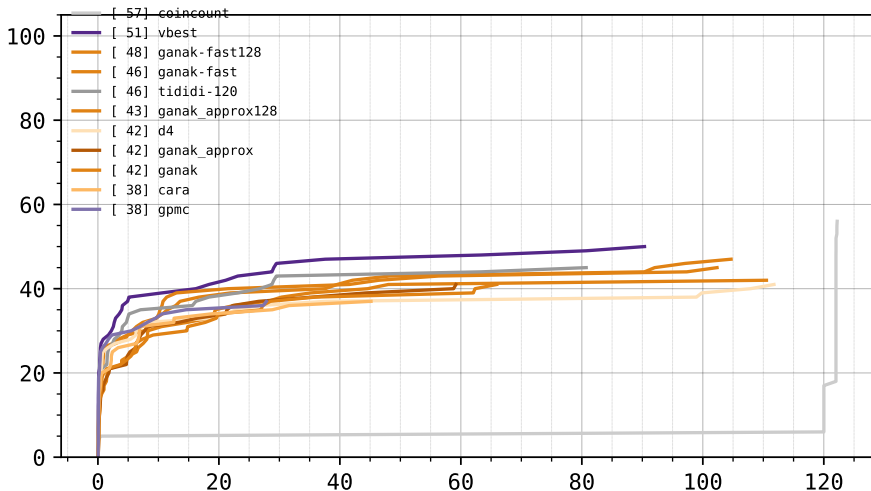
Track 1: Model Counting



Track 1F: Model Counting, 120s budget

0%	0.1%	0.8	Heu.	Counter	Author	Solved
			1	CoinCount	Jiong Yang, Tim van Bremen, Kuldeep S. Meel	57
1	1	1	2	Ganak	Mate Soos, Kuldeep S. Meel, Jiong Yang	48
2	2	2	3	TiDiDi	Guy Van den Broeck, Florent Capelli	46
3	3	3	4	d4	Pierre Marquis, Jean-Marie Lagniez	42
4	4	4	5	Cara	Petr Illner	38
4	4	4	5	gpmc	Kenta Ito, Kenji Hashimoto	38

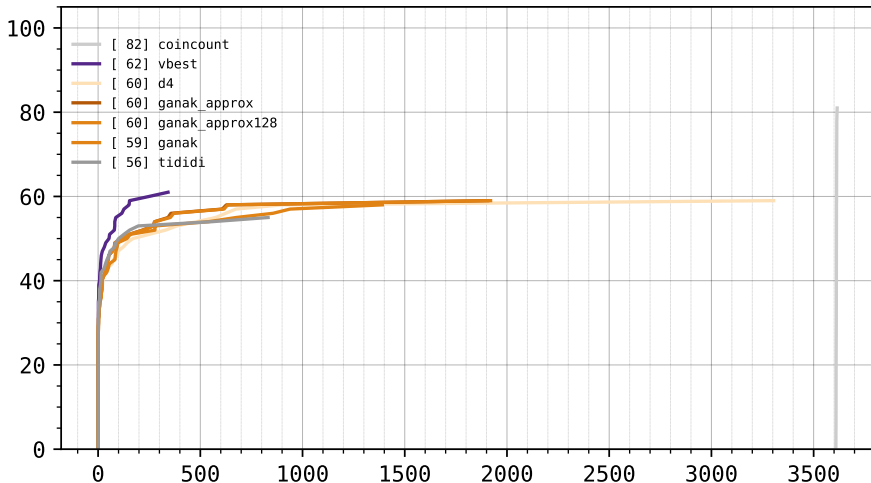
Track 1F: Model Counting, 120s budget



Track 2B: Weighted Model Counting

0%	0.1%	0.8	Heu.	Counter	Author	Solved
			1	CoinCount	Jiong Yang, Tim van Bremen, Kuldeep S. Meel	82
	1	1	2	Ganak-approx	Mate Soos, Kuldeep S. Meel, Jiong Yang	60
1	1	1	2	d4	Pierre Marquis, Jean-Marie Lagniez	60
2	3	3	4	Ganak	Mate Soos, Kuldeep S. Meel, Jiong Yang	59
	4	4	5	TiDiDi	Guy Van den Broeck, Florent Capelli	56
3	5	5	6	gpmc	Kenta Ito, Kenji Hashimoto	55

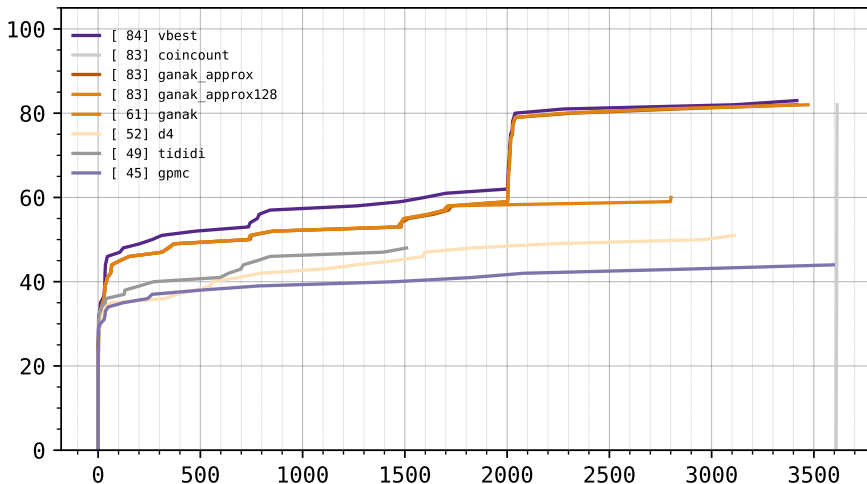
Track 2B: Weighted Model Counting



Track 3: Projected Model Counting

0%	0.1%	0.8	Heu.	Counter	Author	Solved
			1	CoinCount	Jiong Yang, Tim van Bremen, Kuldeep S. Meel	83
		1	1	Ganak-approx	Mate Soos, Kuldeep S. Meel, Jiong Yang	83
1	1	2	3	Ganak	Mate Soos, Kuldeep S. Meel, Jiong Yang	61
2	2	3	4	d4	Pierre Marquis, Jean-Marie Lagniez	52
3	3	4	5	TiDiDi	Guy Van den Broeck, Florent Capelli	49
4	4	5	6	gpmc	Kenta Ito, Kenji Hashimoto	45

Track 3: Projected Model Counting

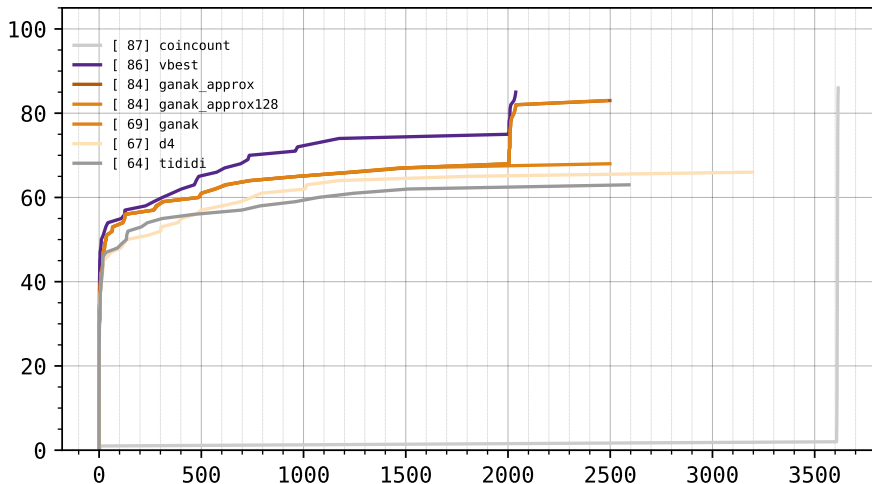


Track 4: Projected Weighted Model Counting²

0%	0.1%	0.8	Heu.	Counter	Author	Solved
			1	CoinCount	Jiong Yang, Tim van Bremen, Kuldeep S. Meel	87
		1	2	Ganak-approx	Mate Soos, Kuldeep S. Meel, Jiong Yang	84
1	1	2	3	Ganak	Mate Soos, Kuldeep S. Meel, Jiong Yang	69
2	2	3	4	d4	Pierre Marquis, Jean-Marie Lagniez	67
	3	4	5	TiDiDi	Guy Van den Broeck, Florent Capelli	64
3	4	5	6	gpmc	Kenta Ito, Kenji Hashimoto	57

²This track contained instances from mc, pmc, and wmc categories. We did not receive any pwmc instances and refrained from generating weights or projection variables randomly.

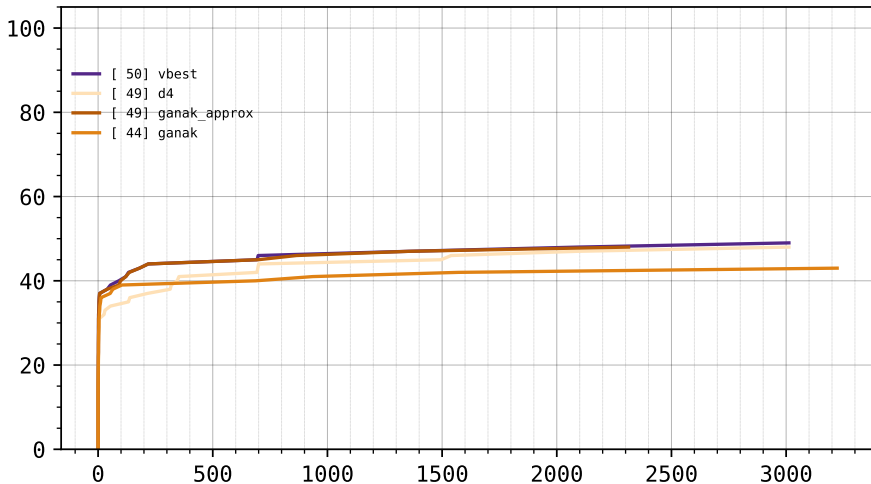
Track 4: Projected Weighted Model Counting



Track 5B: Algebraic Model Counting, complex weights

0%	0.1%	0.8	Heu.	Counter	Author	Solved
	1	1	1	Ganak-approx	Mate Soos, Kuldeep S. Meel, Jiong Yang	49
1	1	1	1	d4	Pierre Marquis, Jean-Marie Lagniez	49
2	3	3	3	Ganak	Mate Soos, Kuldeep S. Meel, Jiong Yang	44

Track 5B: Algebraic Model Counting, complex weights



Overview

Many New Additions

- CoinCount (first ever heuristic counter)
- TiDiDi (great newcomer)
- Two new tracks!
- Lots of new applications!

FLoC Medals

Most Competitive Solver over the Last 6 Years

Ganak Solver Contributors

Mate Soos, Jiong Yang, Kuldeep S. Meel, Shubham Sharma

Most Robust Solver over the Last 6 Years

D4 Solver Contributors

Jean-Marie Lagniez and Pierre Marquis

Thanks to

- **Olivier Roussel (CRIL Cluster)**
- **All the participants of the 2026 competition!**
 - For their submissions and active participation
 - Their patience
- **All contributors of instances!**
- Judge (Mario Alviano) /
Technical Advisor (Daniel Le Berre)



Call for benchmarks in October.
Hope we see you in 2027.
mccompetition.org

Certificates

MODEL COUNTING

