



# ORE2013

## *OWL Reasoner Evaluation Workshop*

Competition: Rafael Gonçalves, Nicolas Matentzoglou, Bijan Parsia  
Organisers / PC chairs: Ernesto Jimenez Ruiz, Samantha Bail

# BRIEF OVERVIEW

- Competition details
- What we measure
- The corpus
- Offline competition results
  - Full corpus
  - User submitted ontologies
- Online competition results
  - Winning reasoners
  - Winning bet



# COMPETITION DETAILS

- 14 participating reasoners
  - 9 OWL 2 DL, 4 EL, 1 RL
- Challenges (per profile)
  - Classification
  - Consistency
  - Satisfiability (of randomly selected classes)
- Corpus
  - random sample from web crawl + known repositories
  - 204 DL, 200 EL, 197 RL

- TrOWL
- Konclude
- TReasoner
- HermiT
- MORe
- FaCT++
- Jfact
- Chainsaw
- WSClassifier
- ELK
- jcel
- SnoRocket
- ELepHant
- BaseVISor

# SUBMITTED ONTOLOGIES

- Data Mining OPTimization (DMOP) - C. Maria Keet, Agnieszka Ławrynowicz, Claudia d'Amato, Melanie Hilario
- Genomic CDS - Matthias Samwald
- FMA and GALEN versions - Weihong Song, Bruce Spencer, Weichang Du
- KB Bio IOI - Vinay K. Chaudhri, Michael A. Wessel, Stijn Heymans



# COMPETITION DETAILS



Rafael "Benchmark" Gonçalves



# TEETHING ISSUES



Rafael "Sadface" Goncalves



# TEETHING ISSUES

- Over a week to get systems to adhere to our I/O specs
- OWL API parsers/serializers causing problems = painful
- Memory/time management = painful (combining ulimit and Java's Xmx results in many errors)
- Running 14 different systems in different languages on one machine/OS = painful
- Conclusion: running a reasoner competition is **tough**.
- **But: everything will be easier next year!**

# WHAT WE MEASURE

OWL ontology (valid syntax,  
non-trivial, in profile)

Reasoning task

Reasoner

Success

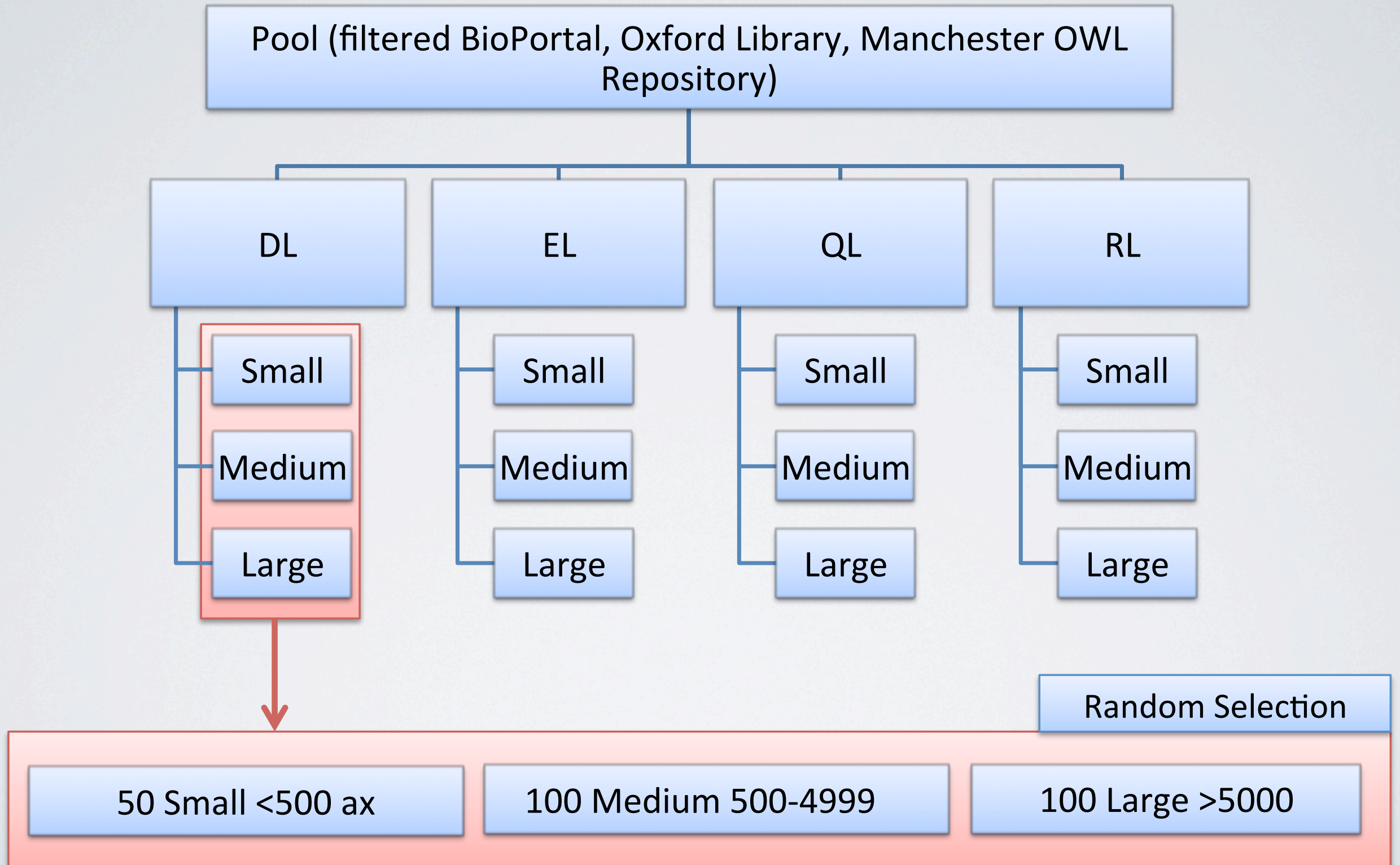
- processed without errors
- completed without timeout
- correct result

Fail

- error (parser, Java...)
- timeout (5 minutes)
- incorrect result



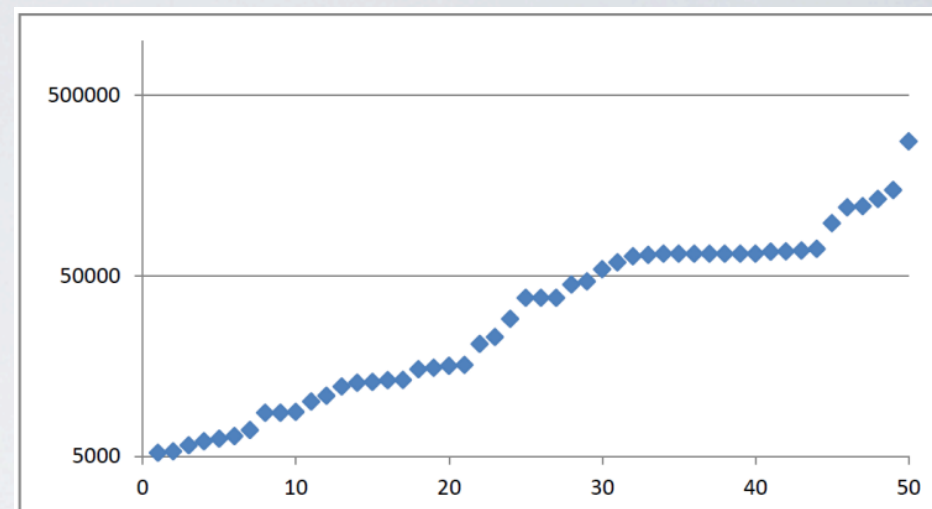
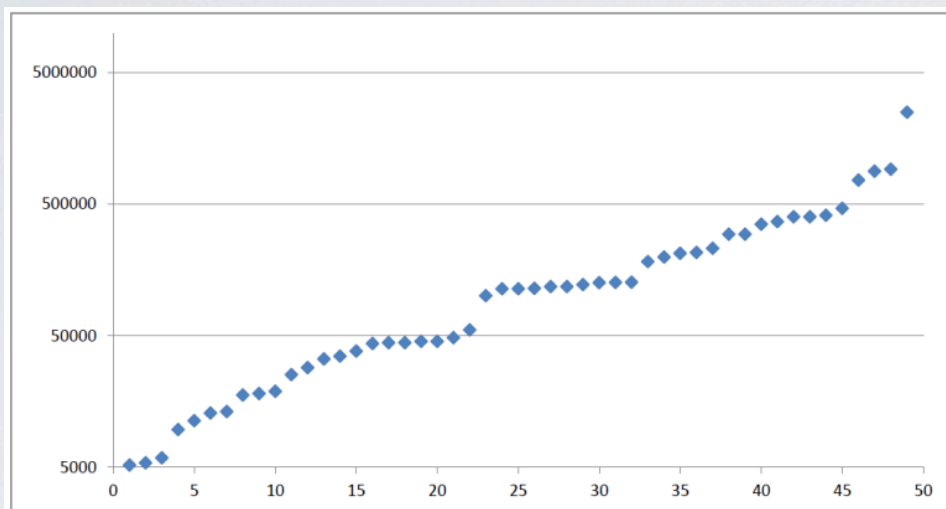
# THE CORPUS



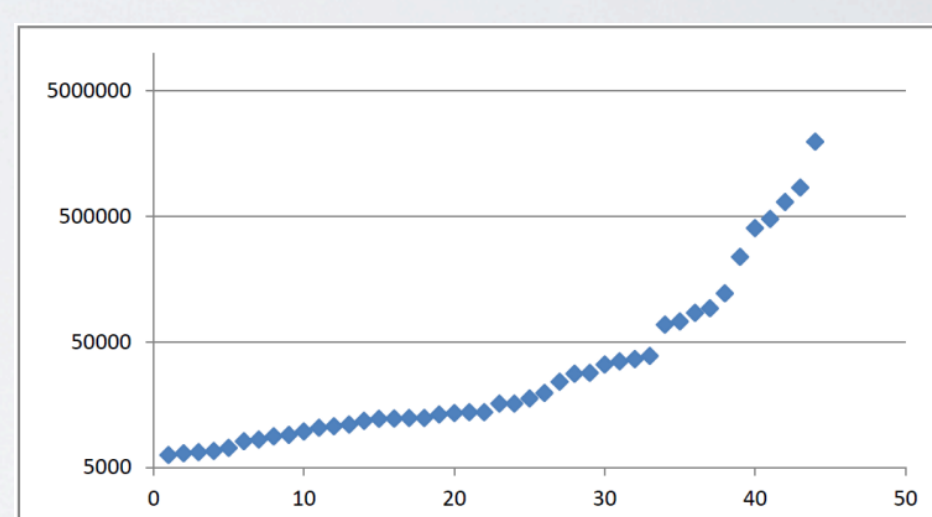
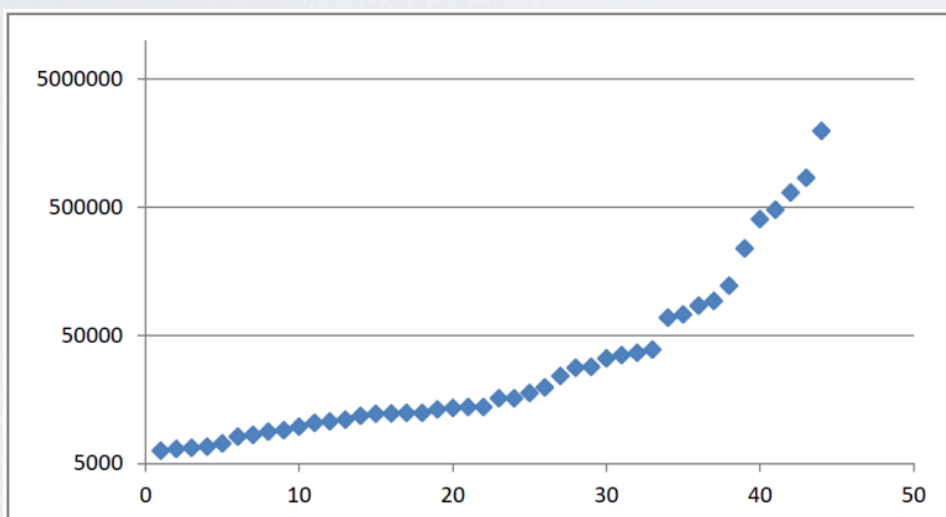


# THE CORPUS

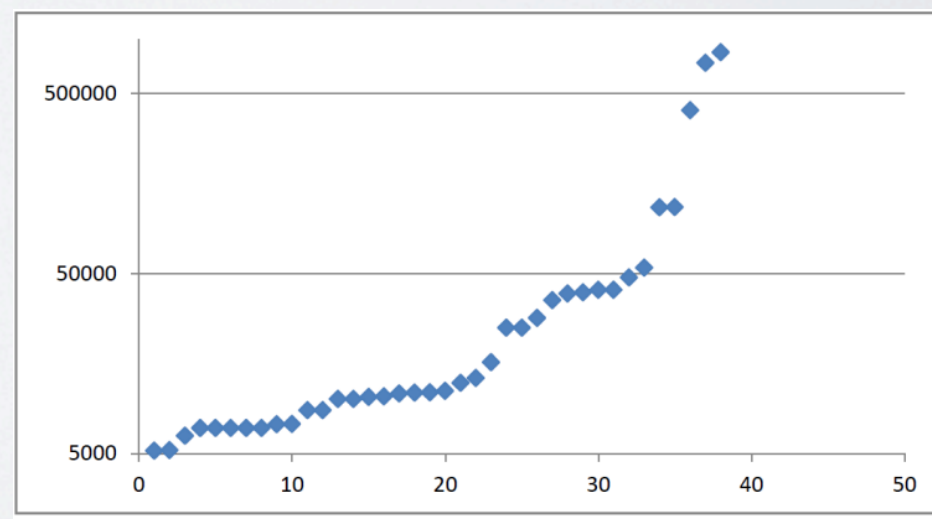
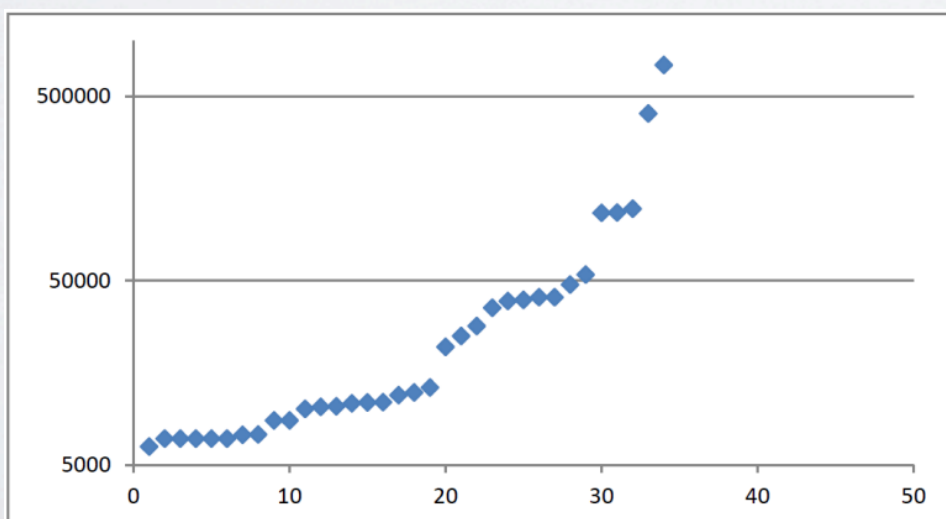
DL



EL



RL





# THE HARDWARE

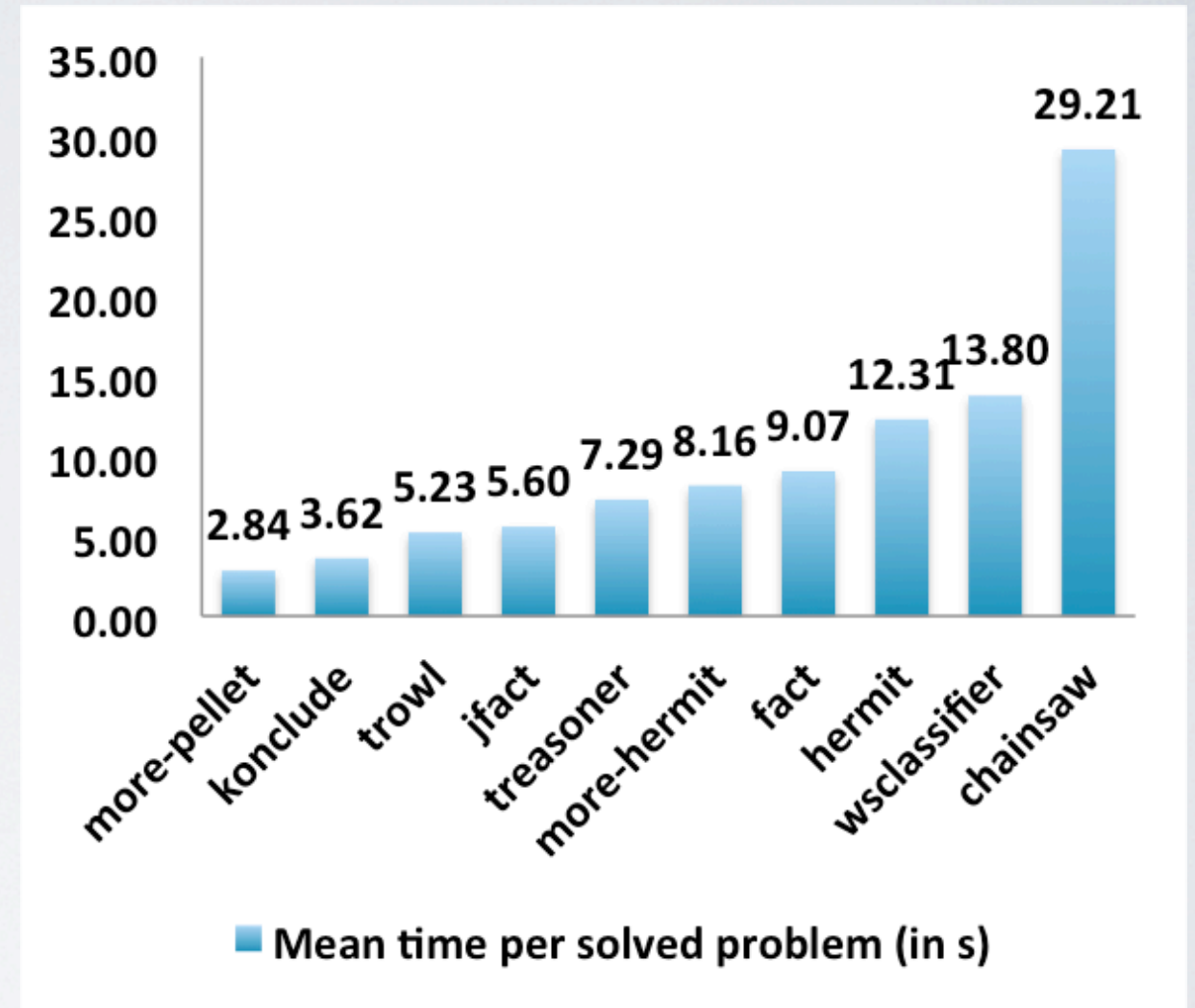
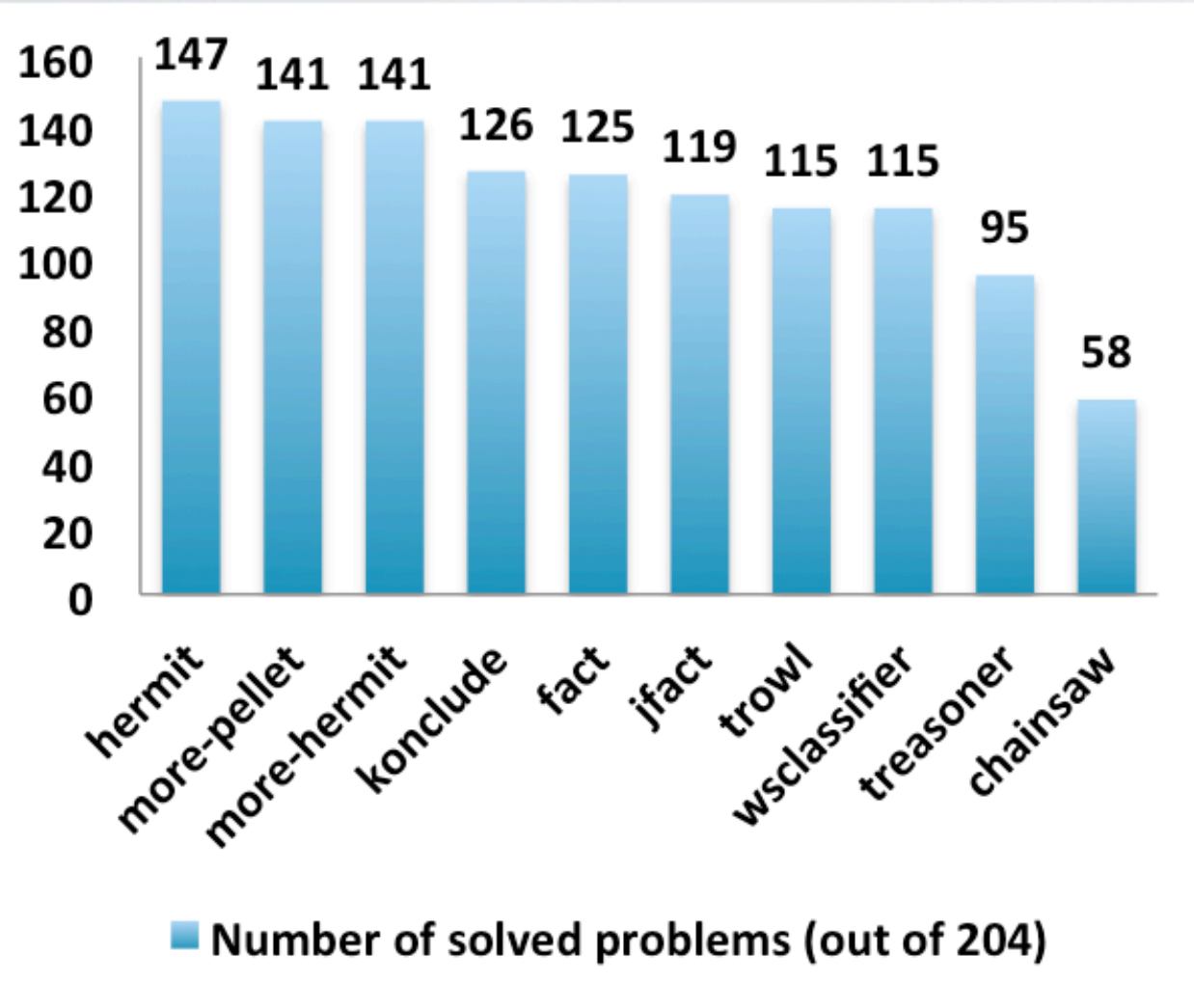
- We aimed for “standard” machines:
  - Cluster of identical PCs (1 reasoner per machine)
  - QuadCore Intel Xeon CPU @ 2.33GHz
  - 12GB RAM / 8GB RAM assigned to process
  - Running some rather old Fedora version (Fedora 12)
  - Java version 1.6.0\_18



# OFFLINE-COMPETITION

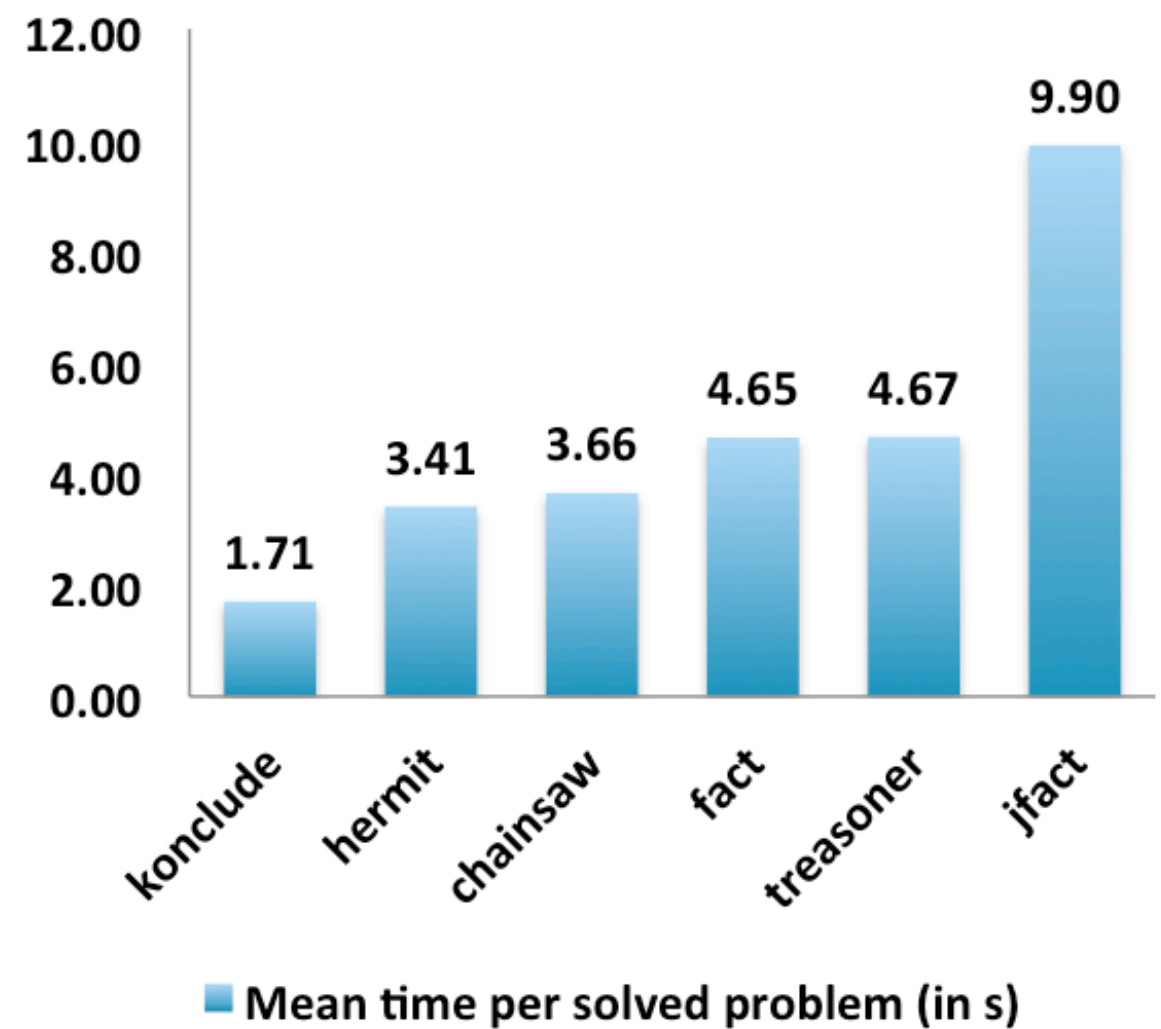
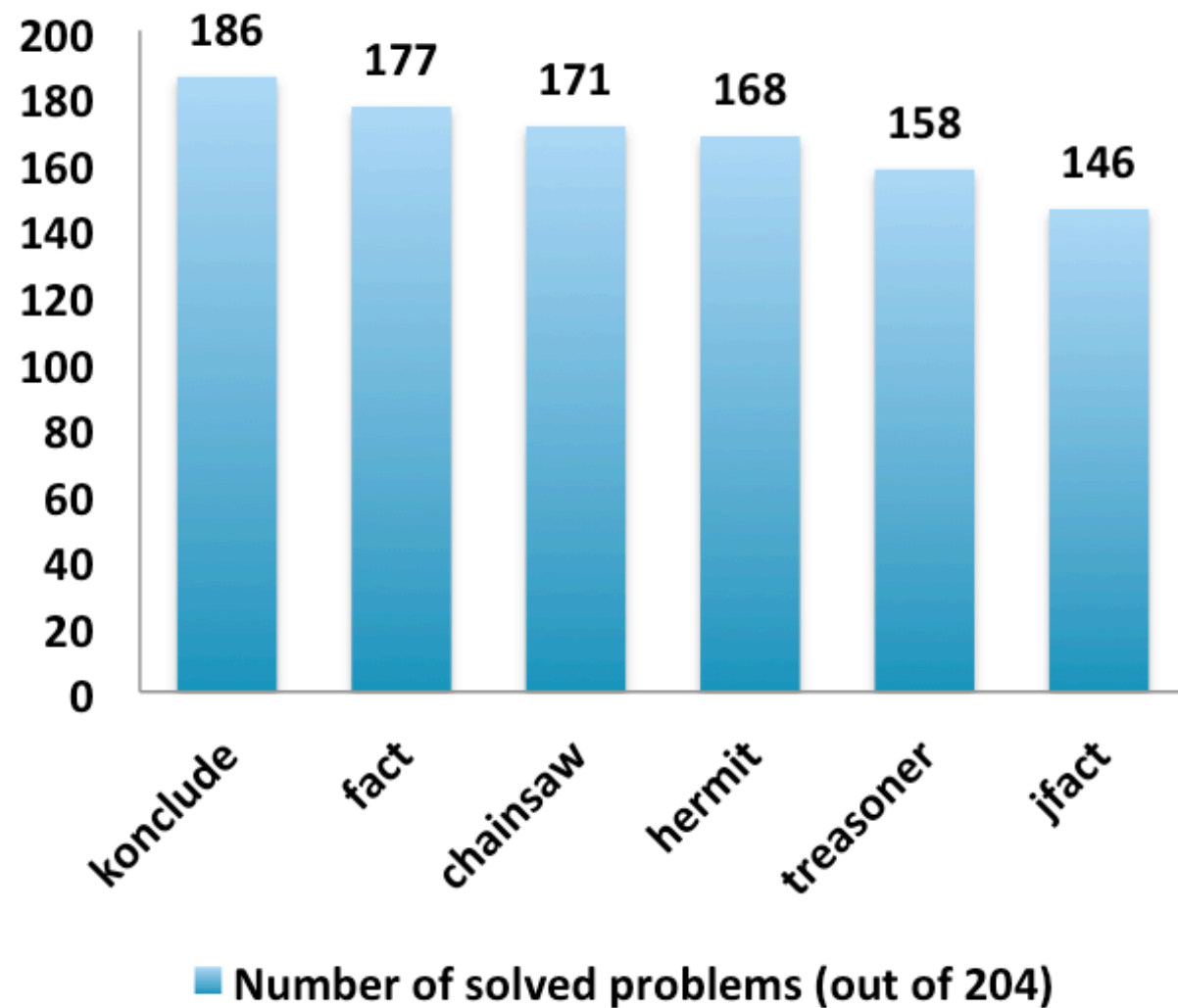


# RESULTS: CLASSIFICATION DL



Winner: HermiT

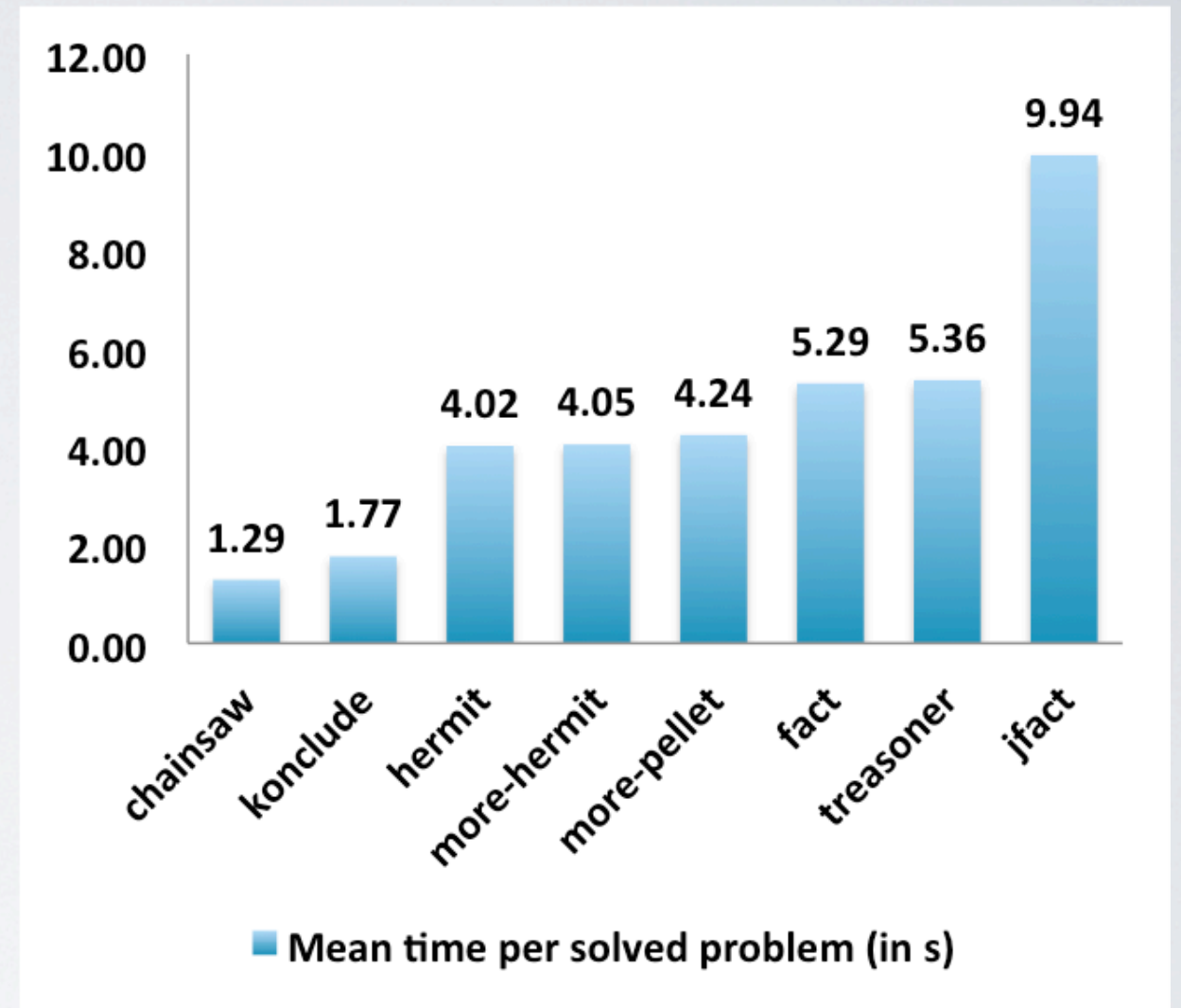
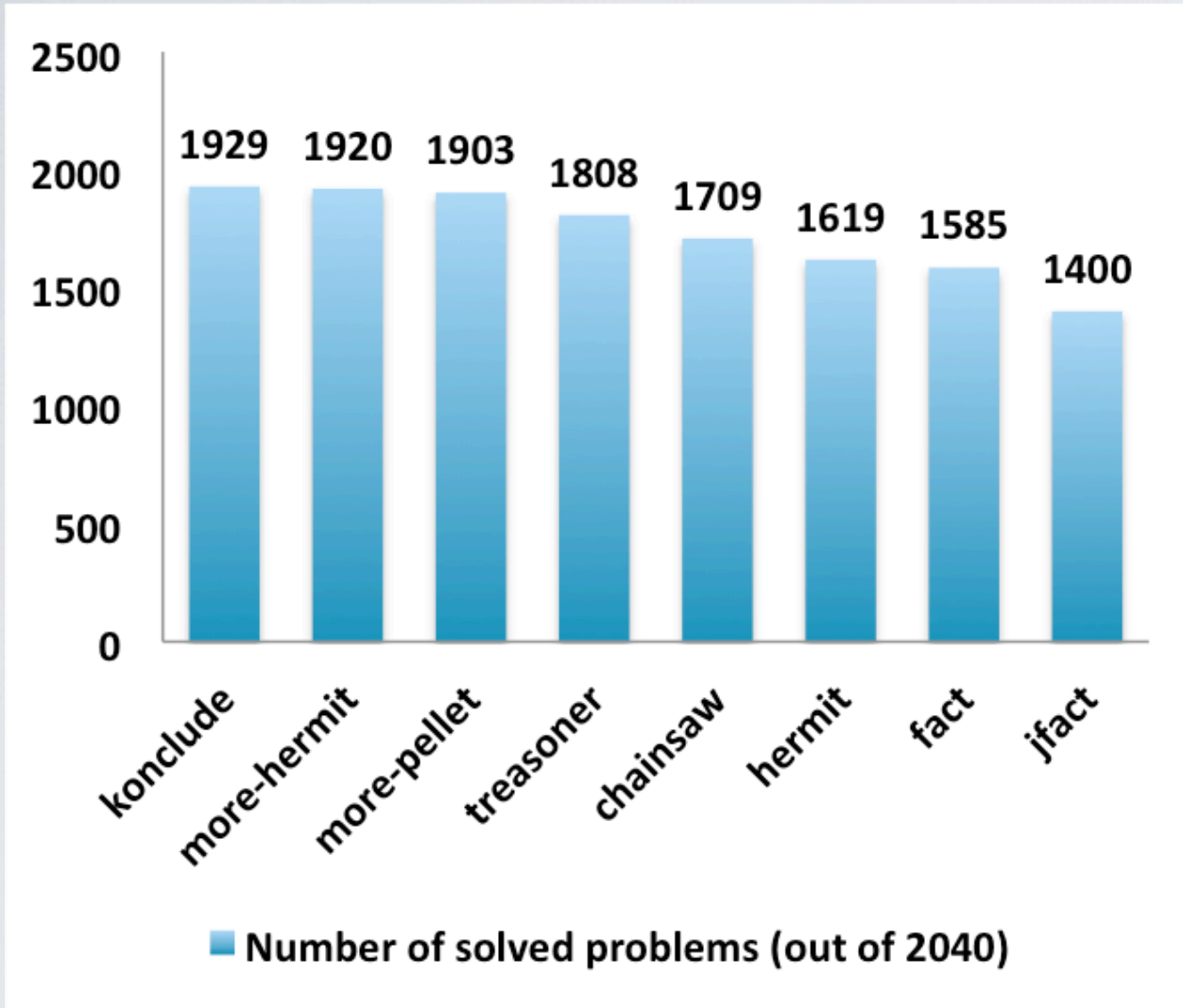
# RESULTS: CONSISTENCY DL



Winner: Konclude (also fastest!)

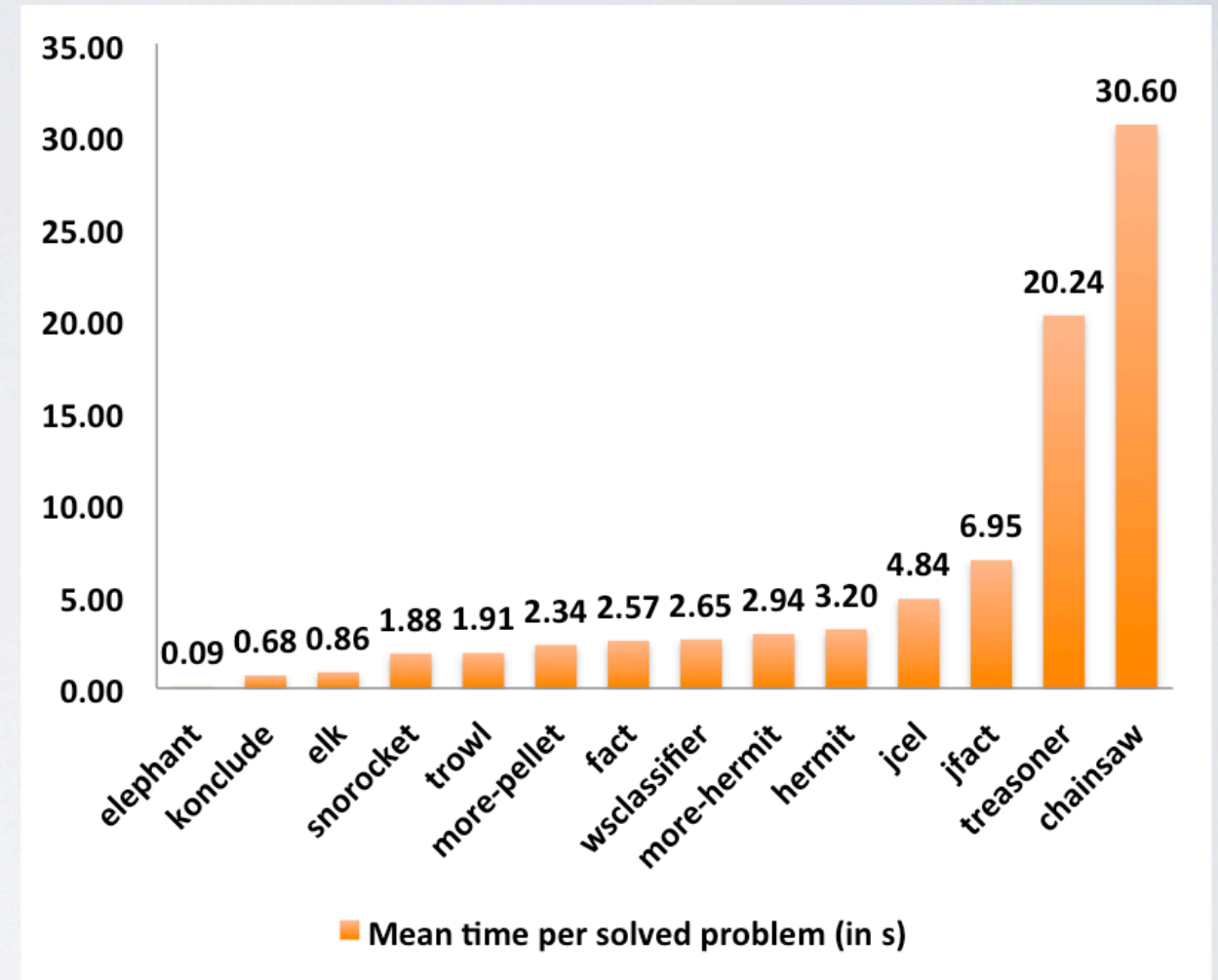
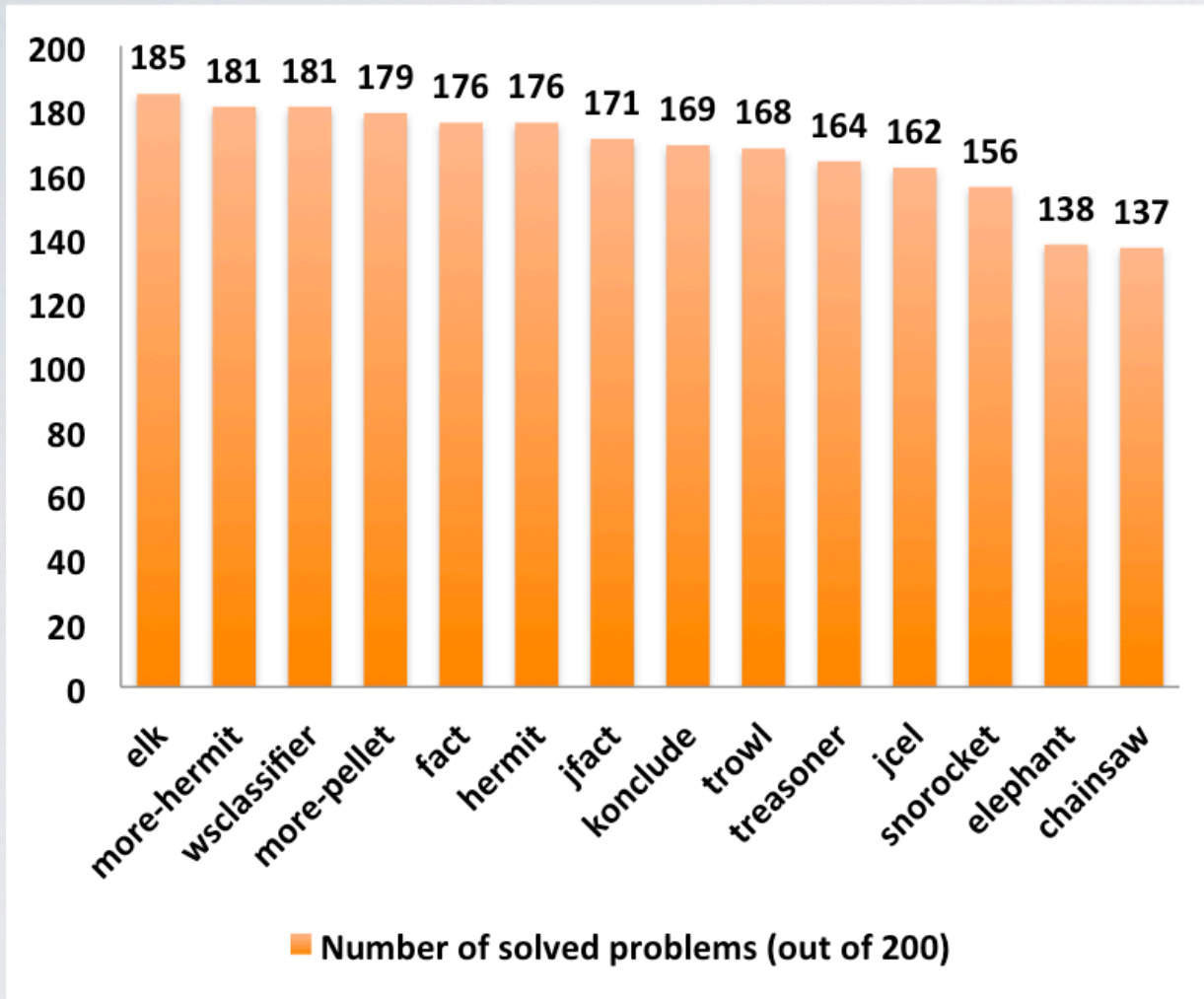


# RESULTS: SAT DL



Winner: Konclude

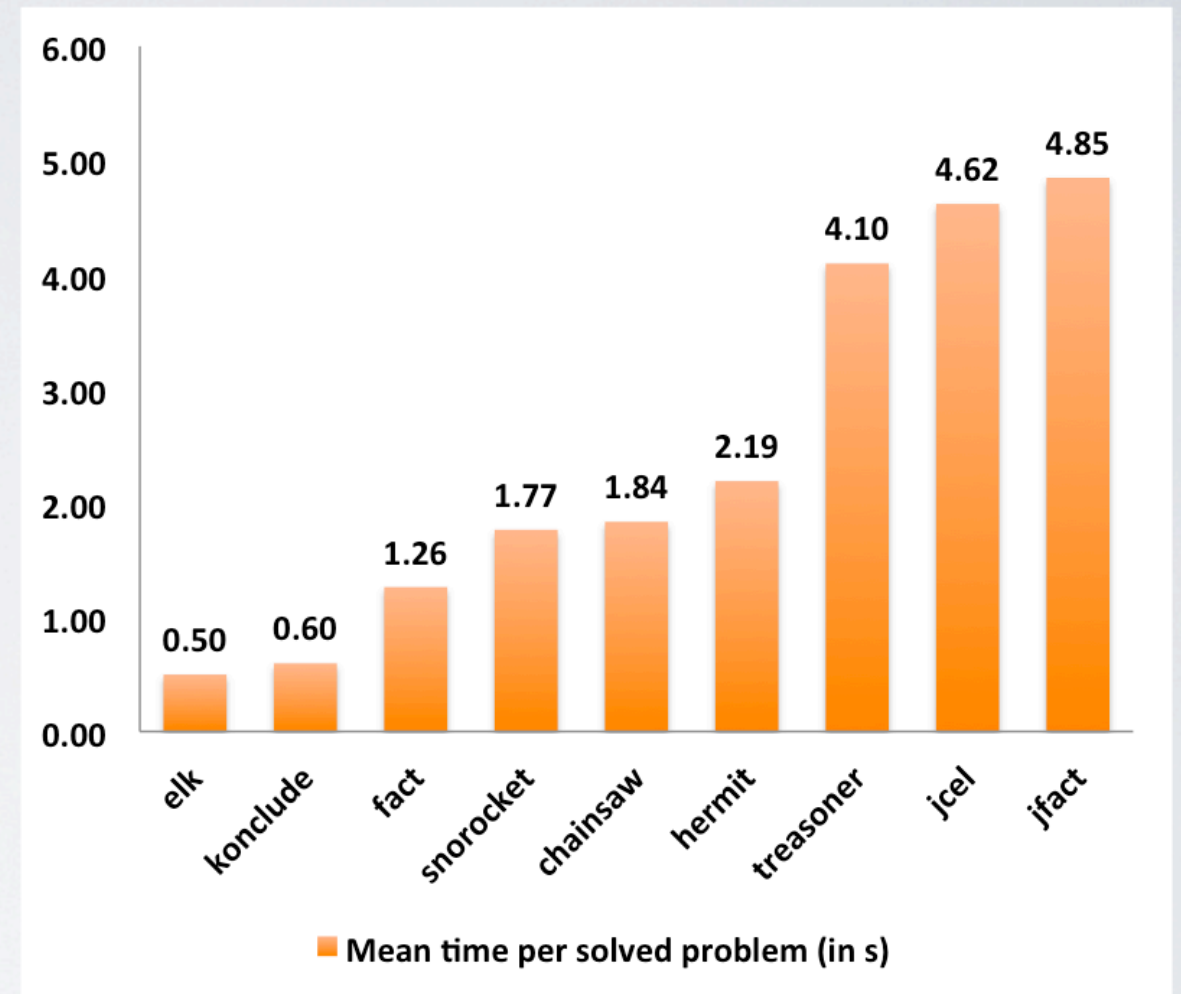
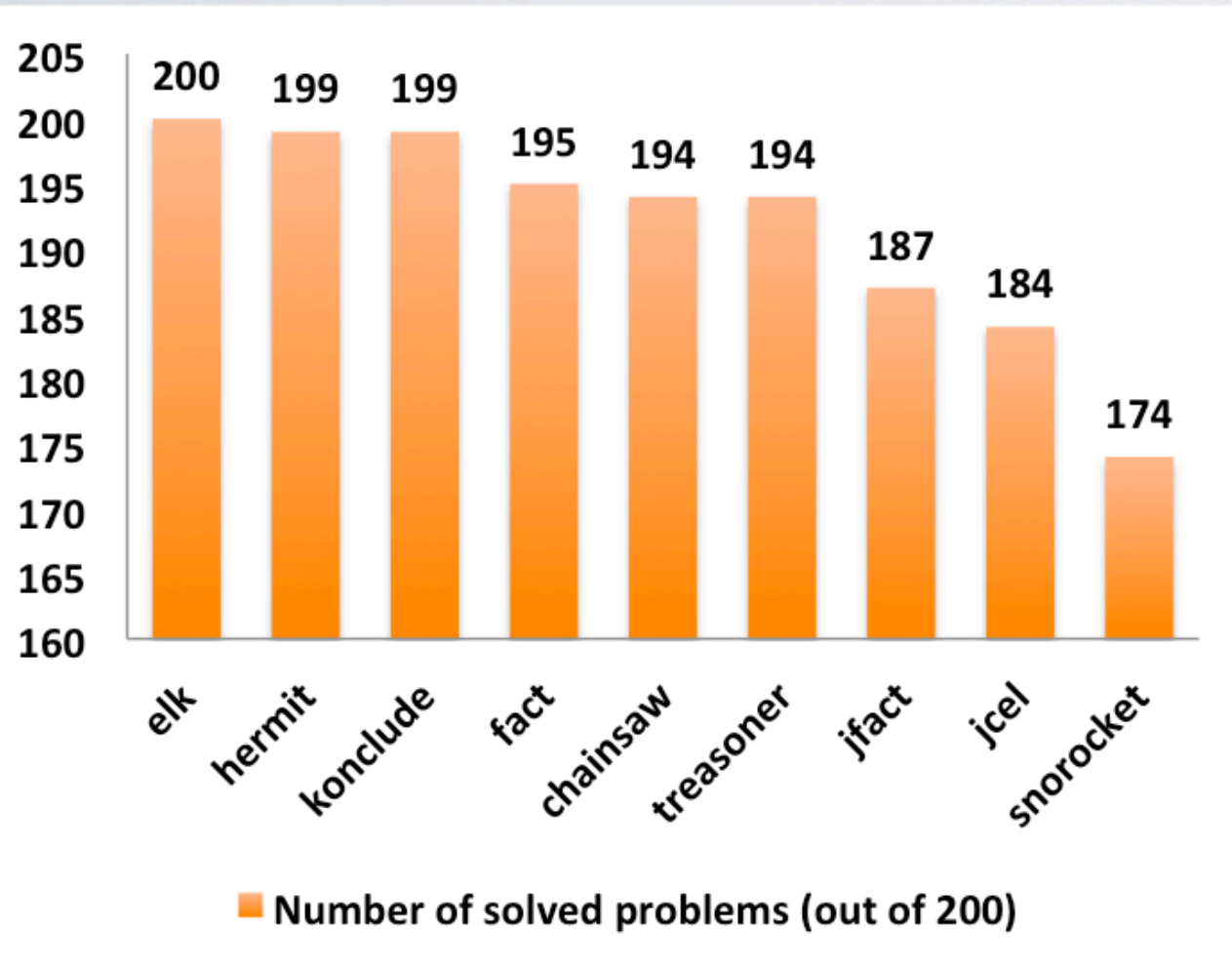
# RESULTS: CLASSIFICATION EL



Winner: ELK

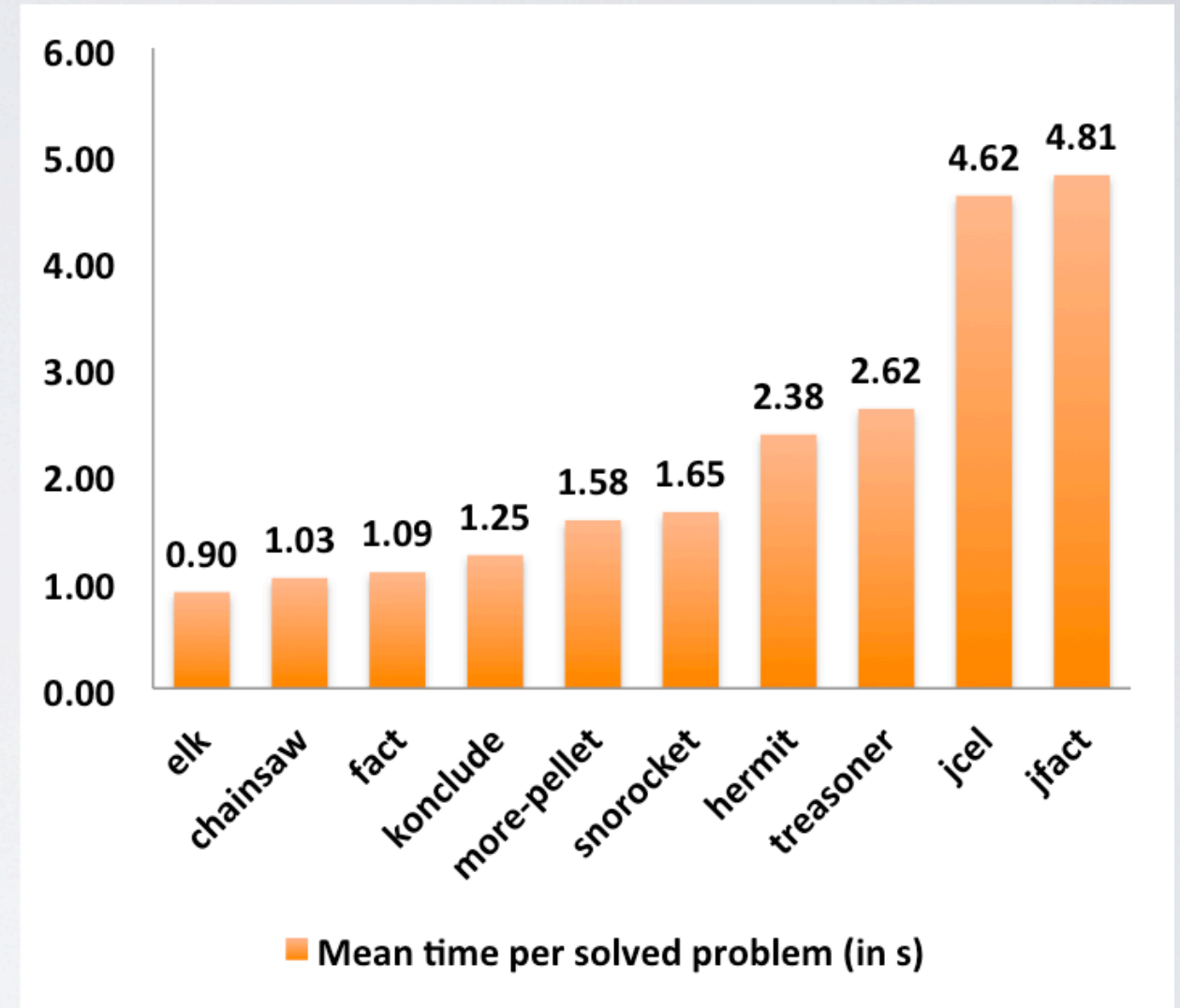
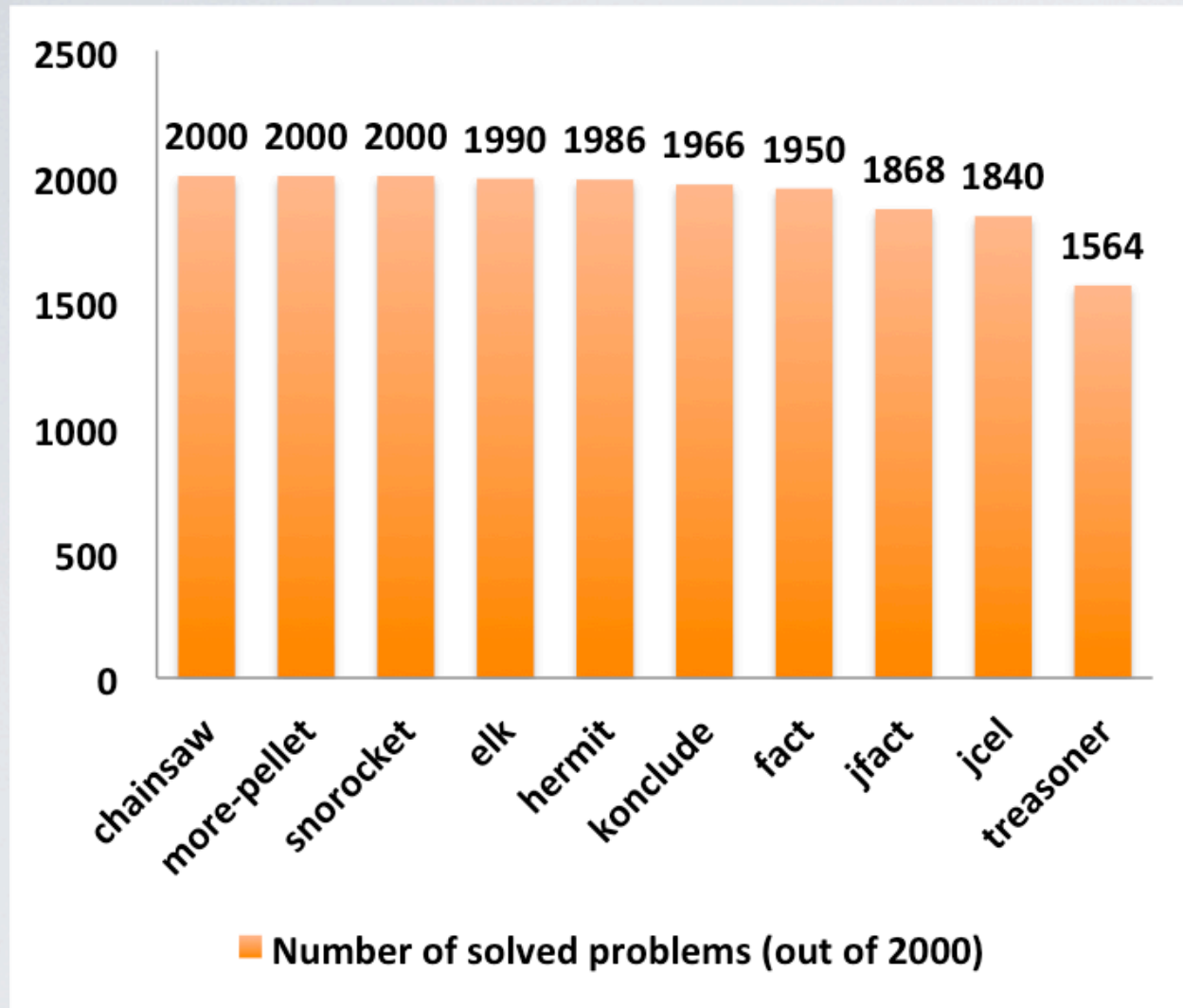


# RESULTS: CONSISTENCY EL



Winner: ELK (also fastest!)

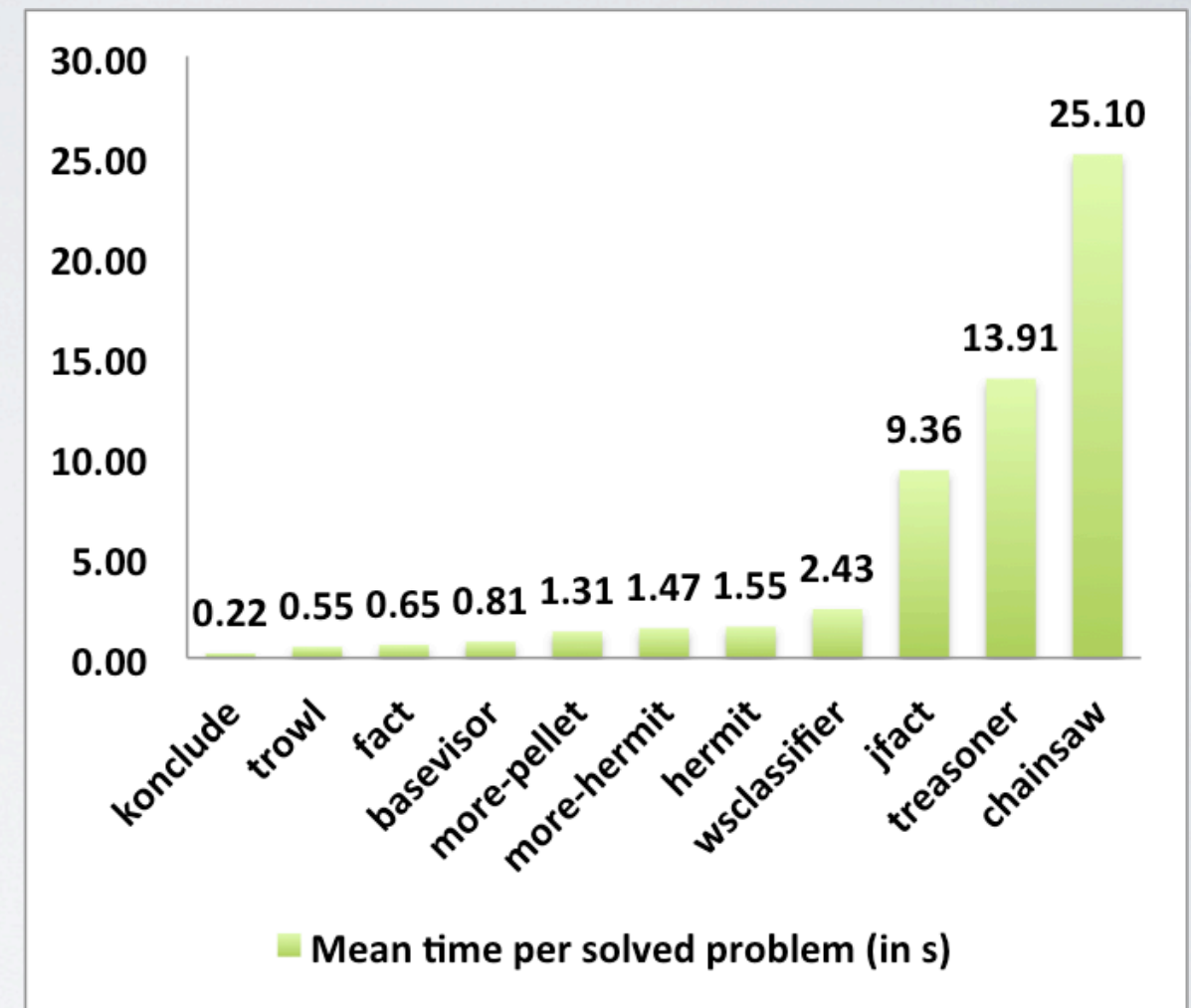
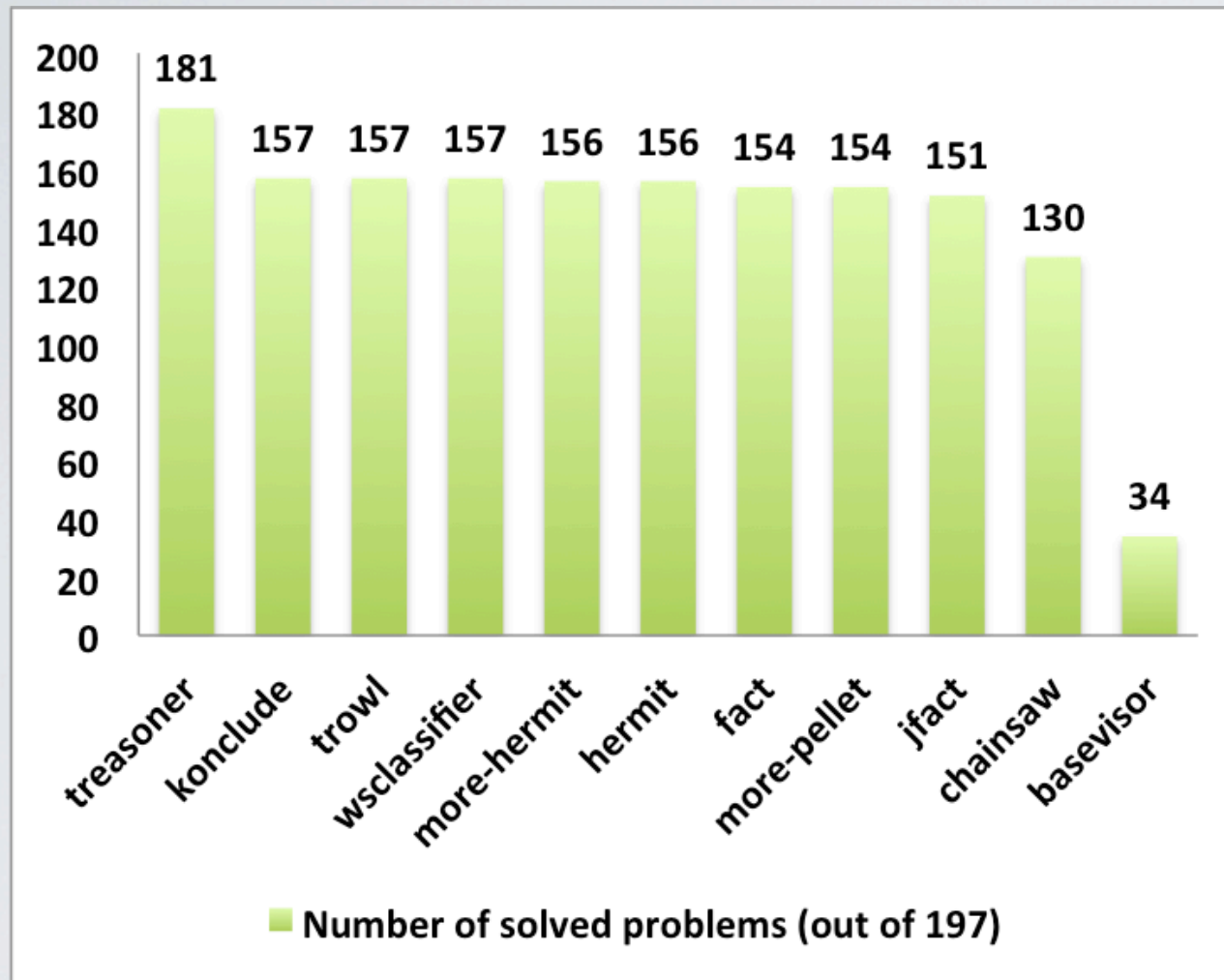
# RESULTS: SAT EL



Winner: Chainsaw

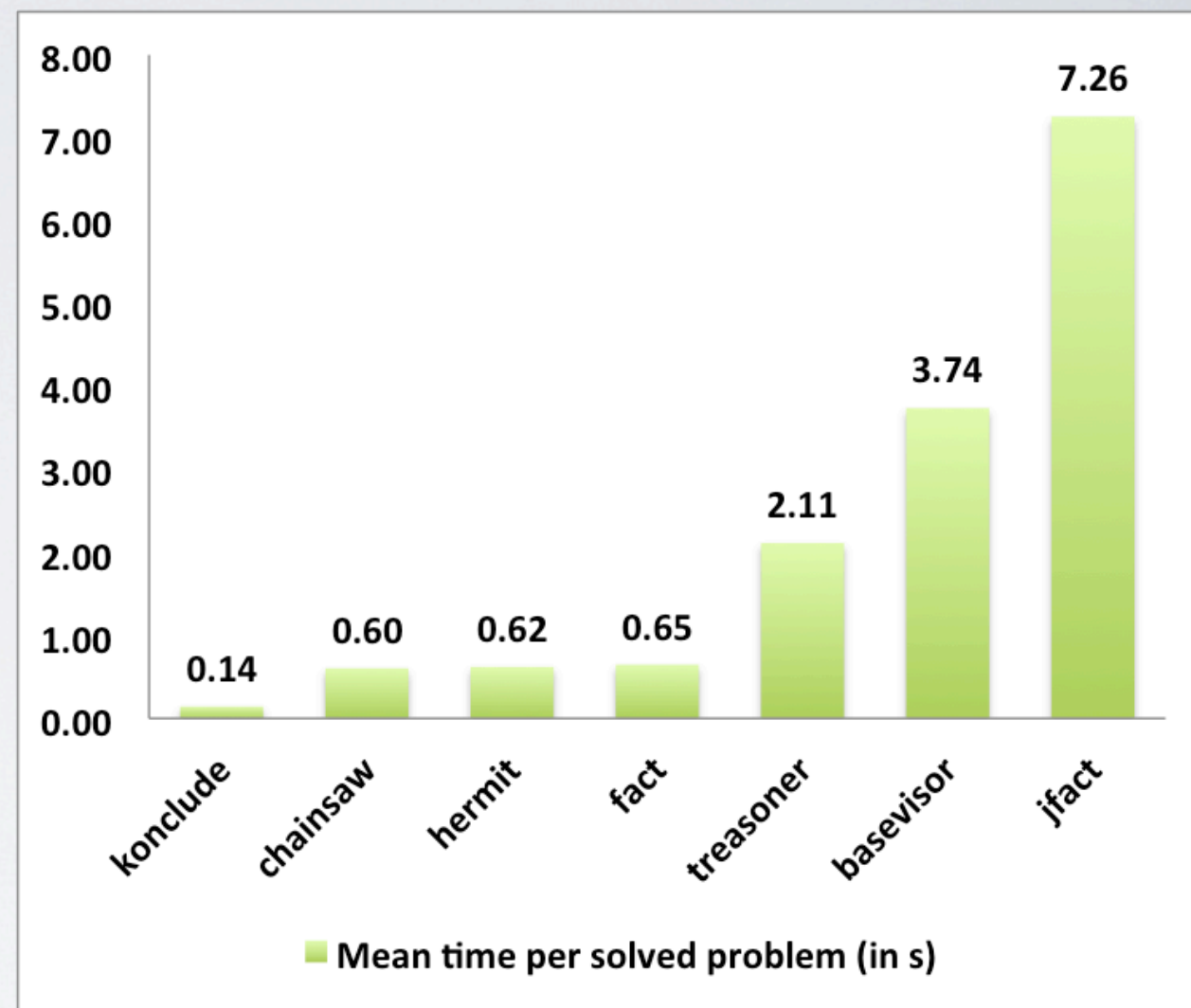
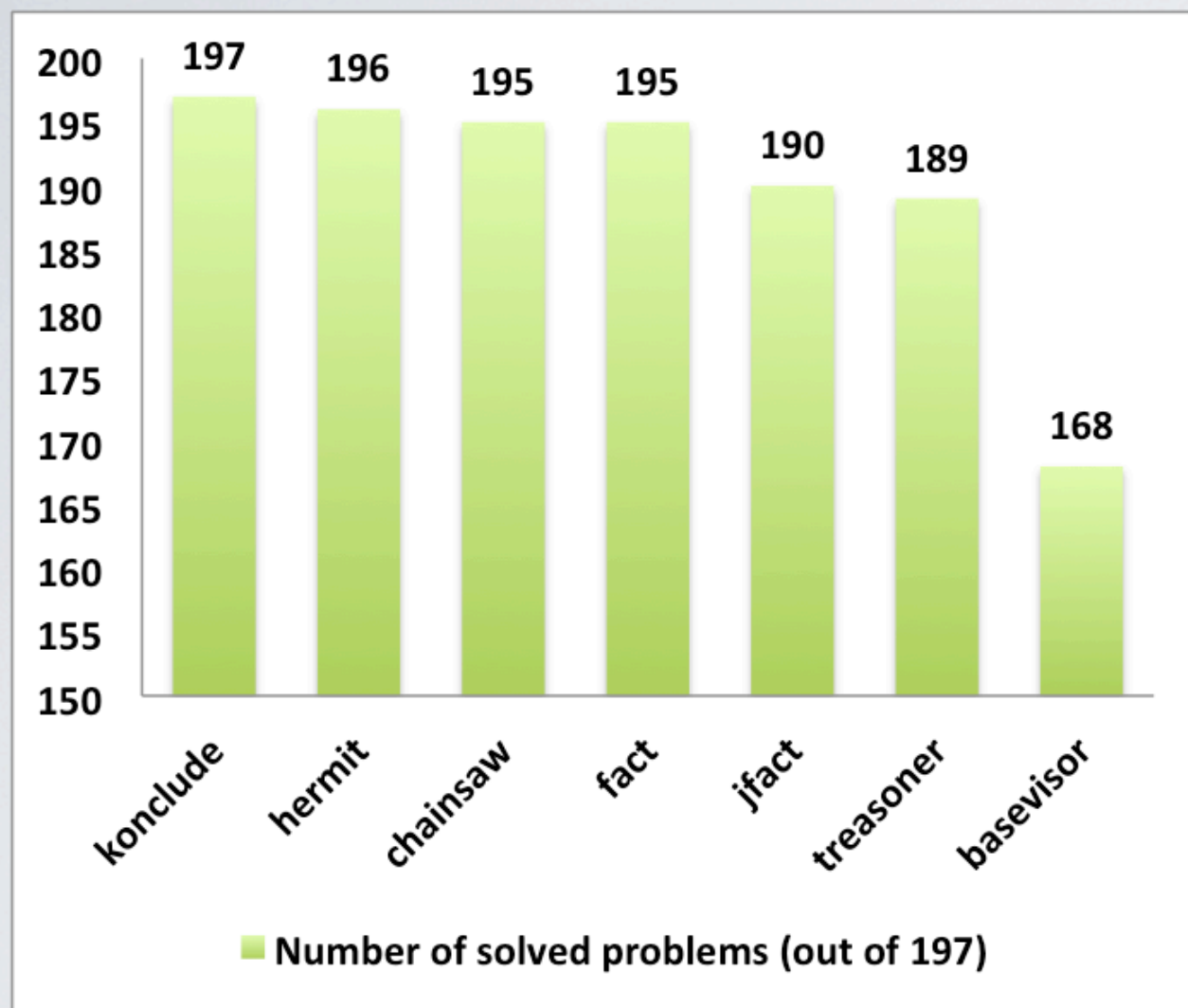


# RESULTS: CLASSIFICATION RL



Winner: TReasoner

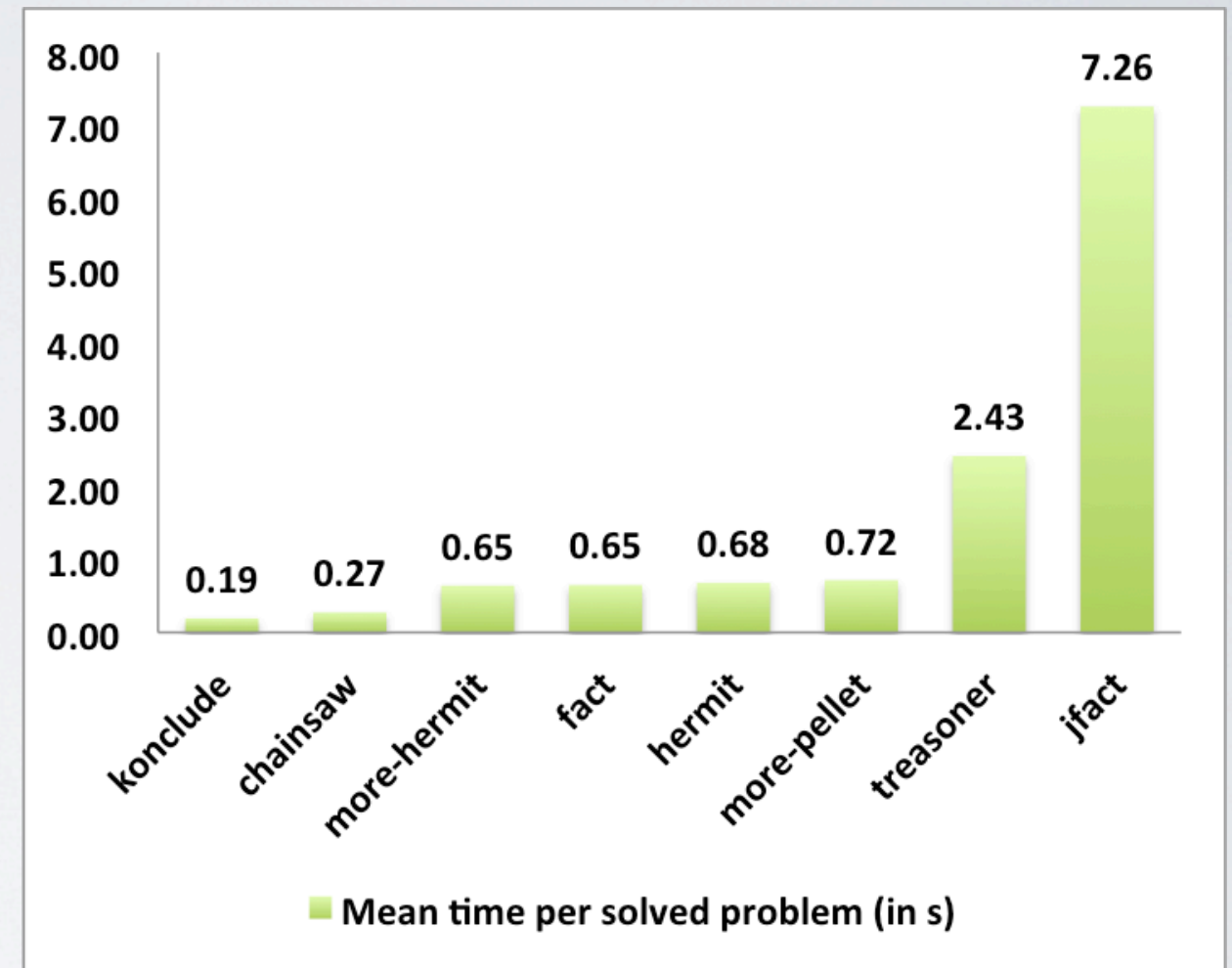
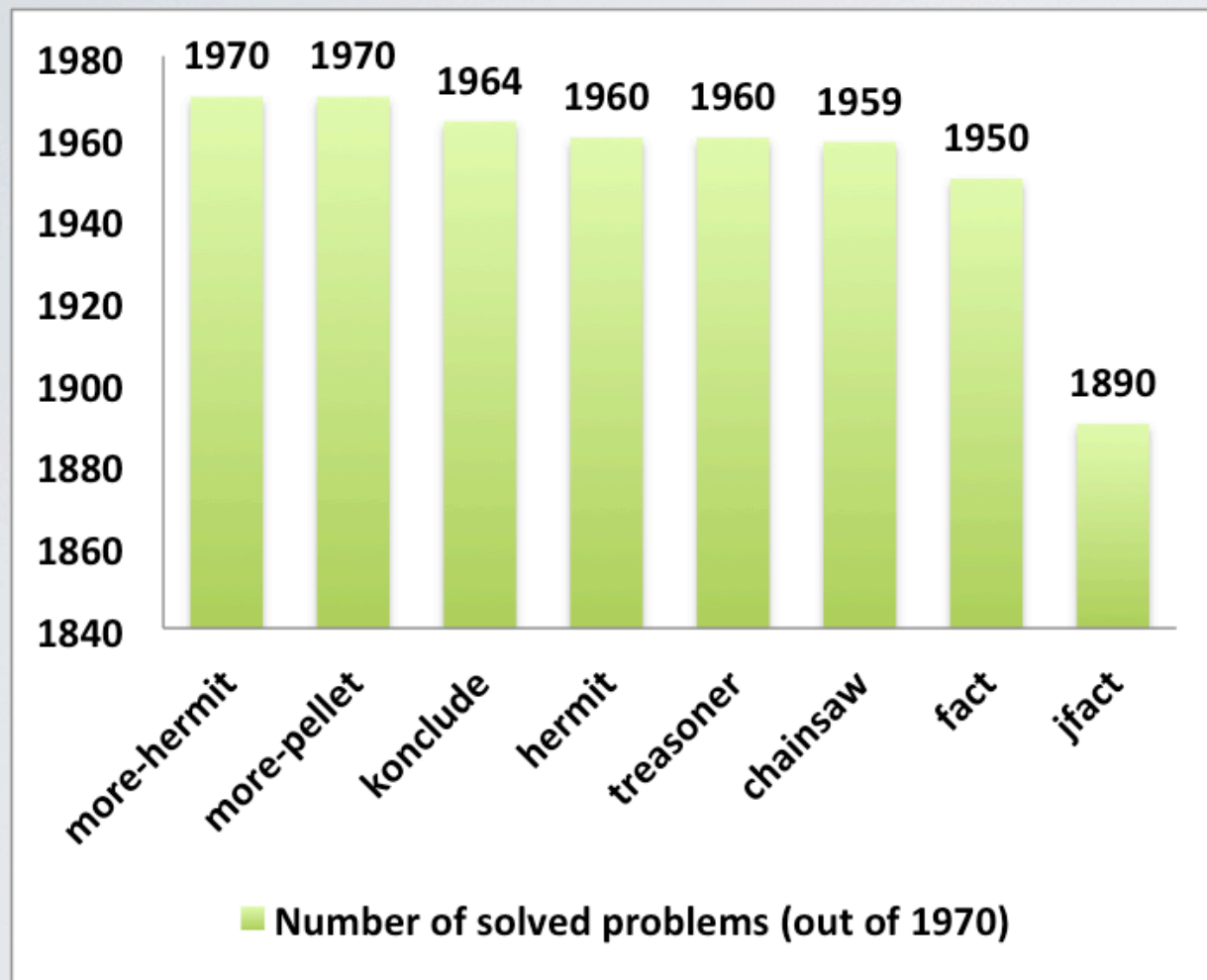
# RESULTS: CONSISTENCY RL



Winner: Konclude (also fastest!)



# RESULTS: SAT RL



Winner: MORe

# SPECIAL MENTION

The jury says:

*“This candidate only entered one competition and did struggle with a high number of timeouts, but the ones that were classified were incredibly fast. We want to see more!”*

Thumbs up, **ELepHant**.



# BEST NEWCOMER

The jury says:

*“This candidate hardly ever made it to the top, but consistently performed well in terms of time **and** robustness - a steady, reliable workhorse.”*

Well done, **MORe!**

LIVE-COMPETITION



# LIVE COMPETITION - EL

*The winning EL reasoner correctly classified  
**196 out of 200** OWL 2 EL ontologies.*

Well done, **ELK!**

# LIVE COMPETITION - DL

*The winning DL reasoner correctly classified  
**153 out of 221** OWL 2 DL ontologies.*

Well done, **WSCClassifier!**



# LIVE COMPETITION - BETS

We have a clear winner who bet *exactly* the right number for their reasoner.

The winner will be announced at the Social Dinner tonight!

# WHAT NEXT?

- Data will be available online soon!
  - Benchmarking framework
  - Ontologies
  - Results
- ORE 2014 in Vienna!
- Ongoing activities on the W3C OWLED community group
- More information: <http://ore2013.cs.manchester.ac.uk>



# ACKNOWLEDGEMENTS

- ORE participants (reasoner **and** ontology submissions!)
- PC members
- Additional reviewers
- DL organisers
  - in particular the local organisers Birte Glimm & Yevgeny Kazakov & their helpers
- The reasoner tamers: Rafael Gonçalves & Nico Matentzoglu
- Infrastructure provider
- Our sponsor!

