

# The International Runtime Verification Competition

...

2019

Kristin Yvonne Rozier and Giles Reger

# Headlines

The past has seen three tool competitions and one benchmark competition exploring different aspects of Runtime Verification

This year we introduce a new format combining these

Two tracks - benchmarks and tools

Two languages - Mission-time Linear Temporal Logic (MLTL) and First-Order LTL (QTL)

One deadline - 31st December, 2019

# Two Languages

Mission-time Linear Temporal Logic (Reinbacher, Rozier, and Schumann, 2014)

- Widely used common fragment of MTL
- Future (and past) LTL extended with finite, integer bounds without interval start/end restrictions, evaluated over finite traces
- Translatable into STL and many variations of MTL

Quantified Temporal Logic (Havelund, Peled, and Ulus, 2017)

- Starting point for a parametric logic
- Past-time LTL extended with quantifiers
- Should be translatable into most existing parametric logics

# Benchmark Track

Following a similar structure to the 2018 RV Benchmark Challenge

Only two categories, one for each language (no Open category)

Submitted benchmarks scored by an expert panel

Accepts 'static' benchmarks or benchmark generators

Fixed formats for traces

Benchmarks that pass some simple checks will be used in next year's tool track

# What is a Benchmark?

1. Input Stream(s) (traces) assigning values to variables (for MLTL) or predicates (for QTL) at each (finite) time stamp
  - a. Call this computation  $\pi$  over time stamps from 0 to MAX
2. Property written in temporal logic over the variable(s) (for MLTL) or predicates (for QTL) in the input stream(s)
  - a. Call this formula  $\phi$
3. Oracle: for each time stamp, what is the valuation of the formula starting from that time given the input stream?
  - a. Formally: forall  $i$ : from 0 to MAX,  $\pi_i$  models  $\phi$ ?
4. Bonus: how do you know the oracle is correct?

# Tool Track

Two categories, one for each language

Starting with benchmarks submitted to RVBC 2018 in those languages

Organisers may extend this set

All tools must accept a fixed format for specifications and traces

Tools scored on correctness and resource usage

# Summary

Final rules will be released by 25th October

Expressions of interest to compete can be sent to organisers now

Final deadline will be 31st December, 2019

Results published by 28th February, 2020

Formats will be fixed, or at least backwards-compatible, in the future - extending tools now will pay-off in the future

Please take part and have fun!