





Scalability: Different Approaches

Solver-based Approaches:

- **SAT/SMT solvers**
- **SyGUS solvers**
- **Incremental SAT solvers**

GPU-based Approaches:

- **Parallelizing different computations**

Search-space Optimization

- **Generating candidate formulas
from sample**



<https://scarlet.labri.fr/>



<https://github.com/rajarshi008/Scarlet>



<https://pypi.org/project/Scarlet-ItI/>



<https://github.com/ritamraha/Teal>

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1 R. Raha, R. Roy, N. Fijalko, D. Neider, & G. Pérez (VMCA'24): Synthesizing Efficiently Monitable Formulas in Metric Temporal Logic

2 R. Raha, R. Roy, N. Fijalkow, & D. Neider (TACAS'22): Scalable Anytime Algorithms for Learning Fragments of Linear Temporal Logic

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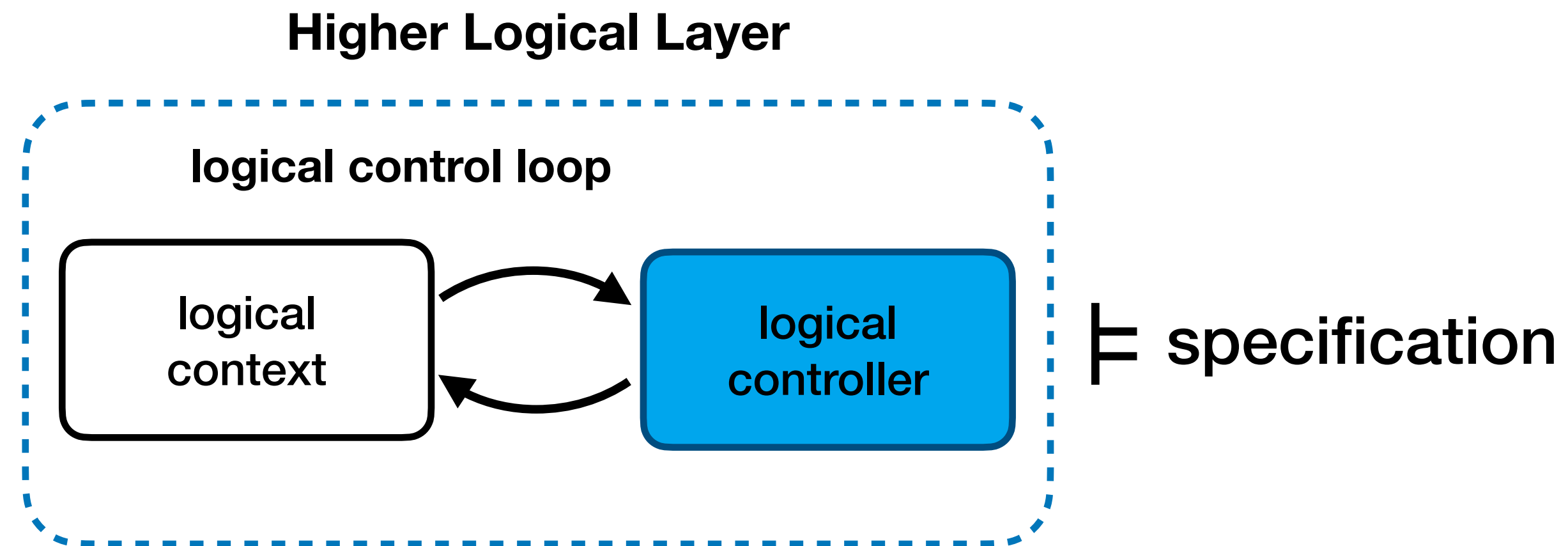
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1. **R. Raha**, R. Roy, N. Fijalkow, D. Neider, & G. A. Pérez (VMCAI'24): Synthesizing Efficiently Monitorable Formulas in Metric Temporal Logic
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Formal Methods



Specification (Inference)

- (TACAS'22) LTL Learning
- (JOSS'24) SCARLET
- (VMCAI'24) MTL Learning

Verification

‘Ensure controller satisfies the goal’

Reactive Synthesis

‘Design correct-by-construction controller’