LDLf-to-DFA in practice

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Contents

- Review of theory from temporal logics to DFA
  - In particular, from Linear Temporal Logic and Linear Dynamic Logic on finite traces (LTLf/LDLf)

- Presentation of recent work on the topic
  - Compositional LTLf/LDLf to DFA (ICAPS 2021, to appear)

- Learn to use tools and software libraries
  - Temporal logic formulae library
  - Automata library
  - LDLf to DFA library

Projects

- Work on this research topic, e.g.:
  - extend the approach to Past temporal logics (PLTLf/PLDLf)
  - do experimental comparison with other tools
  - Test the limitations of the approach, find bottlenecks

- Use the tools for other tasks:
  - Train an RL agent using restraining bolts
  - Set up a planning task with temporal goals
  - Encode a planning domain in a formula and compute the DFA

References

- G. De Giacomo and M. Vardi. "Linear temporal logic and linear dynamic logic on finite traces." In IJCAI, 2013.
- R. Brafman, G. De Giacomo, and F. Patrizi. LTLf/LDLf non-markovian rewards. In AAAI, 2018.
- S. Bansal, Y. Li, L. Tabajara, and M. Vardi. Hybrid compositional reasoning for reactive synthesis from finite-horizon specifications. In AAAI 2020.
- G. De Giacomo and M. Favorito, “Compositional Approach to Translate LTLf/LDLf into Deterministic Finite Automata,” in ICAPS 2021 (to appear)