Linear Temporal Logic: From Infinite to Finite Horizon

Moshe Y. Vardi
Rice University, Houston, TX, USA

Abstract

Linear Temporal Logic (LTL), proposed in 1977 by Amir Pnueli for reasoning about ongoing programs, was defined over infinite traces. The motivation for this was the desire to model arbitrarily long computations. While this approach has been highly successful in the context of model checking, it has been less successful in the context of reactive synthesis, due to the challenging algorithmics of infinite-horizon temporal synthesis. In this talk we show that focusing on finite-horizon temporal synthesis offers enough algorithmic advantages to compensate for the loss in expressiveness. In fact, finite-horizon reasonings is useful even in the context of infinite-horizon applications.

2012 ACM Subject Classification Theory of computation → Modal and temporal logics

Keywords and phrases
Temporal Logic

Digital Object Identifier 10.4230/LIPIcs.TIME.2022.1

Category Invited Talk

Funding Work supported in part by NSF grants IIS-1527668, CCF-1704883, IIS-1830549, CNS-2016656, DoD MURI grant N00014-20-1-2787, and an award from the Maryland Procurement Office.

References