

Timed systems

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This talk will outline known results and open problems concerning timed and hybrid automata and real-time logics, focusing on complexity theory and expressiveness.

We will recall classical results in the theory of timed and hybrid automata including the complexity of reachability, non-closure under complement, undecidability of language equivalence and the complexity of timed games. In addition we will consider more recent results on decidable sub-classes of automata.

Concerning logics we will discuss the decidability and complexity of real-time model checking and the relative expressiveness of temporal and monadic predicate logics over the reals.

References

- [1] R. Alur and P. Madhusudan. Decision Problems for Timed Automata: A Survey. In *Formal Methods for the Design of Real-Time Systems*. Springer LNCS, volume 3185, 2004.
- [2] Y. Hirshfeld and A. Rabinovich. Timer formulas and decidable metric temporal logic. *Information and Computation*, volume 198(2):148–178, 2005.