

Discovering of the unobservable behaviour of an Interpreted Petri Net model

Publié le 11 décembre 2019 - 58th IEEE Conf. on Decision and Control (CDC'19)

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This paper focuses on the problem of discovering a Petri Net model from long event sequences generated by a discrete event system. Precisely, it is assumed that the behavior of the relations between input and output events (i.e. the observable behaviour of the system) is already modeled by a set of Interpreted Petri Net fragments while the behavior of the internal state evolutions (i.e. the unobservable behaviour) must be discovered. An approach inspired to net synthesis is proposed. It relies on an optimization-based procedure for the identification of the unobservable structure, consisting of a set of places only without adding new transitions, and the initial marking of the added places.