Bruni, Roberto; Montanari, Ugo; Sammartino, Matteo

Causal trees, finally. (English) [Zbl 1434.68323]


Summary: Causal trees are one of the earliest pioneering contributions of Pierpaolo Degano, in joint work with Philippe Darondeau. The idea is to record causality dependencies in processes and in their actions. As such, causal trees sit between interleaving models and truly concurrent ones and they originate an abstract, event-based bisimulation semantics for causal processes, where, intuitively, minimal causal trees represent the semantic domain. In the paper, we substantiate this feeling, by first defining a nominal, compositional operational semantics based on History-Dependent automata and then we apply categorical techniques, based on named-sets, showing that causal trees form the final coalgebra semantics of a suitable coalgebraic representation of causal behaviour.

For the entire collection see [Zbl 1325.68011].

MSC:

68Q85 Models and methods for concurrent and distributed computing (process algebras, bisimulation, transition nets, etc.)
18C50 Categorical semantics of formal languages
68Q45 Formal languages and automata
68Q55 Semantics in the theory of computing

Full Text: DOI

References:


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.