

이산 사건 시스템의 기호적 시뮬레이션

(Symbolic Simulation of Discrete Event Systems)

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Abstract

Extending discrete event modelling formalisms to facilitate greater symbol manipulation capabilities is important to further their use in intelligent control and design of high autonomy systems. This paper defines an extension to the DEVS formalism that facilitates symbolic expression of discrete event times by extending the time base from the real numbers to the field of linear polynomials over the reals. A simulation algorithm is developed to generate the branching trajectories resulting from the underlying non-determinism. To efficiently manage linear polynomial constraints based on feasibility checking algorithm borrowed from linear programming. The extended formalism offers a convenient means to conduct multiple, simultaneous explorations of model behaviors. Examples of application are given with consideration on fault model analysis.