

Stochastic reachability analysis of hybrid systems

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Abstrak

Stochastic reachability analysis of hybrid systems is a self-contained and accessible introduction to this novel topic in the analysis and development of stochastic hybrid systems. Beginning with the relevant aspects of Markov models and introducing stochastic hybrid systems, the book then moves on to coverage of reachability analysis for stochastic hybrid systems. Following this build up, the core of the text first formally defines the concept of reachability in the stochastic framework and then treats issues representing the different faces of SRA, stochastic reachability based on Markov process theory, martingale methods, stochastic reachability as an optimal stopping problem, and dynamic programming. The book is rounded off by an appendix providing mathematical underpinning on subjects such as ordinary differential equations, probabilistic measure theory and stochastic modeling, which will help the non-expert-mathematician to appreciate the text.