

ALGORITHMS FOR ANALYSIS, INFERENCE, AND CONTROL OF BOOLEAN NETWORKS

The Boolean network (BN) is a mathematical model of genetic networks and other biological networks. Although extensive studies have been done on BNs from a viewpoint of complex systems, not so many studies have been done from a computational viewpoint. This book presents rigorous algorithmic results on important computational problems on BNs, which include inference of a BN, detection of singleton and periodic attractors in a BN, and control of a BN. This book also presents algorithmic results on fundamental computational problems on probabilistic Boolean networks and a Boolean model of metabolic networks. Although most contents of the book are based on the work by the author and collaborators, other important computational results and techniques are also reviewed or explained.

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