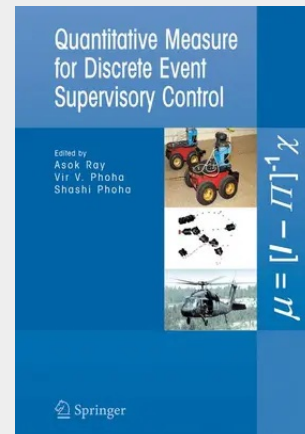


Quantitative Measure for Discrete Event Supervisory Control

Supervisory Control Theory (SCT) provides a tool to model and control human-engineered complex systems, such as computer networks, World Wide Web, identification and spread of malicious executables, and command, control, communication, and information systems. Although there are some excellent monographs and books on SCT to control and diagnose discrete-event systems, there is a need for a research monograph that provides a coherent quantitative treatment of SCT theory for decision and control of complex systems. This new monograph will assimilate many new concepts that have been recently reported or are in the process of being reported in open literature. The major objectives here are to present a) a quantitative approach, supported by a formal theory, for discrete-event decision and control of human-engineered complex systems; and b) a set of applications to emerging technological areas such as control of software systems, malicious executables, and complex engineering systems. The monograph will provide the necessary background materials in automata theory and languages for supervisory control. It will introduce a new paradigm of language measure to quantitatively compare the performance of different automata models of a physical system. A novel feature of this approach is to generate discrete-event robust optimal decision and control algorithms for both military and commercial systems.

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