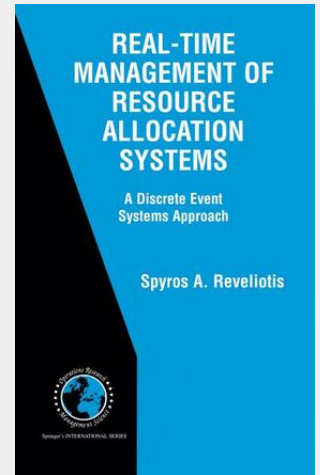


Real-Time Management of Resource Allocation Systems

A Discrete Event Systems Approach

Real-Time Management of Resource Allocation Systems focuses on the problem of managing the resource allocation taking place within the operational context of many contemporary technological applications, including flexibly automated production systems, automated railway and/or monorail transportation systems, electronic workflow management systems, and business transaction supporting systems. A distinct trait of all these applications is that they limit the role of the human element to remote high-level supervision, while placing the burden of the real-time monitoring and coordination of the ongoing activity upon a computerized control system. Hence, any applicable control paradigm must address not only the issues of throughput maximization, work-in-process inventory reduction, and delay and cost minimization, that have been the typical concerns for past studies on resource allocation, but it must also guarantee the operational correctness and the behavioral consistency of the underlying automated system. The resulting problem is rather novel for the developers of these systems, since, in the past, many of its facets were left to the jurisdiction of the present human intelligence. It is also complex, due to the high levels of choice – otherwise known as flexibility – inherent in the operation of these environments.

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