PARTIAL OBSERVATION IN DISCRETE EVENT SYSTEMS

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This talk focuses on a particular class of dynamic systems, namely *discrete event systems* (DESs), which provide the theoretical fundation for the study of dynamic artificial systems, namely man made systems [1]. A DES (or event-driven system), different from time-driven systems, is a dynamic system with a discrete state space, whose evolution depends entirely on the occurrence of asynchronous physical events that determine a state transition. DESs find application in several areas, such as computer science, telecomunication, manufacturing, transportation, logistics, etc. Several problems have been studied in this framework in the last decades, in particular supervisory control, reachability and deadlock analysis, and a series of problems related to the partial observation of the system evolution. In this talk we focus on the last class of problems: we introduce the fundamental problem of state state estimation under partial observation and a series of other problems that can be formulated in the same framework, such us fault diagnosis [2] and opacity analysis [3], two problems that are gaining a growing attention in the framework of cyber-physical systems.

References

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