Abstract

Based on operating mode management, this paper introduces a new framework for studying dynamics of Discrete Event Systems (DES). Studied system presents several operating modes due to the state space explosion problem. To cure this problem, we propose a multi-model approach where each model describes a system in a given operating mode. We assume that only one attempted operating mode is activated at a time, whilst other modes must be inactivated. In order to ensure the alternation between these operating modes, we propose a formal approach using linear algebra. The commutation problem can be defined as compatibility problem when the behavior of physical system switches from an operating mode to another. The compatibility problem is treated as the consistency of current states when a mode generates an event activating the other mode. For this purpose, we introduce the notion of a compatible state in the switching mode.

References

**Index Terms**

Computer Science Control Systems

**Keywords**

discrete event system operating mode management multimodel safe commutation.