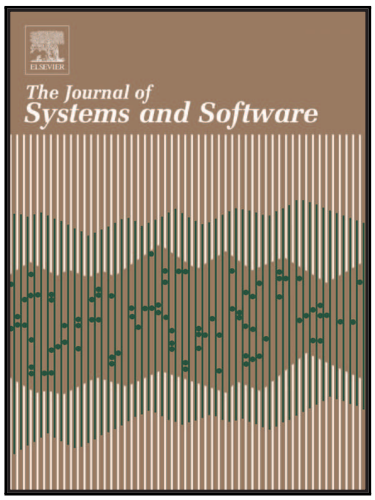

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An Efficient Validation Approach for Quasi-Synchronous Checkpointing oriented to Distributed Diagnosability

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Abstract

The Autonomic Computing paradigm is oriented towards enabling complex distributed systems to manage themselves, even in faulty situations. The diagnosability analysis is *a priori* a study through which a system can be self-aware about its current state. It is from the determination of a consistent state that a system can take some action to repair or reconfigure itself. Nevertheless, in a distributed system it is hard to determine consistent states since we cannot observe simultaneously all the local variables of different processes. In this context, the challenge is to efficiently monitor the system execution over time to capture trace information in order to determine if the system accomplishes both functional and non-functional requirements. Quasi-Synchronous Checkpointing is a technique that collects information from which a system can establish consistent snapshots. Based on this technique, several checkpointing algorithms have been developed. According to the checkpoint properties detected and ensured, they are classified into: Strictly Z-Path Free (SZPF), Z-Path Free (ZPF) and Z-Cycle Free (ZCF). Generally, the method adopted for the performance

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