Yuan, Xinhao; Yang, Junfeng; Gu, Ronghui
Partial order aware concurrency sampling. (English) [Zbl 07682385]

Summary: We present POS, a concurrency testing approach that samples the partial order of concurrent programs. POS uses a novel priority-based scheduling algorithm that dynamically reassigns priorities regarding the partial order information and formally ensures that each partial order will be explored with significant probability. POS is simple to implement and provides a probabilistic guarantee of error detection better than state-of-the-art sampling approaches. Evaluations show that POS is effective in covering the partial-order space of micro-benchmarks and finding concurrency bugs in real-world programs, such as Firefox’s JavaScript engine SpiderMonkey.

For the entire collection see [Zbl 1391.68002].

MSC:

68N19 Other programming paradigms (object-oriented, sequential, concurrent, automatic, etc.)
68Q85 Models and methods for concurrent and distributed computing (process algebras, bisimulation, transition nets, etc.)

Full Text: DOI