

Huo, J., Petrenko, A. "Transition Covering Tests for Systems with Queues" *Software Testing, Verification and Reliability*, 19 (1) March 2009.

Abstract

This paper introduces a method to cover transitions of a concurrent system under test through a context consisting of infinite-capacity queues. Concurrent systems have many important applications, but they are very difficult and expensive to test. One of the difficulties in testing concurrent systems is caused by the fact that queues in the test context can distort the behaviour of a concurrent system under test and can cause state explosion in test derivation. The proposed method derives transition covering tests directly from the specification of a concurrent system, not its composition with queues. As transition coverage is an important industrial metric of test quality, the results of the paper have practical applications. A case study is presented to illustrate one of the applications.