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Abstract

Verification of a modular system composed of communicating components is a difficult problem, especially when the models of the components are not available. Conventional testing techniques are not efficient in detecting erroneous interactions of components because such interactions often occur as interleavings of events that are difficult to reproduce in a modular system. The problem of detecting intermittent errors in the absence of models of components is addressed in this paper. A method to infer a controllable approximation of components through testing is elaborated. The inferred finite state models of components are used to detect intermittent errors and other compositional problems in the system through reachability analysis. The models are refined at each analysis step thus making the approach iterative.