Verification of Large State/Event Systems using Compositionality and Dependency Analysis

Verification of Large State/Event Systems using Compositionality and Dependency Analysis
A state/event model is a concurrent version of Mealy machines used for describing embedded reactive systems. This paper introduces a technique that uses compositionality and dependency analysis to significantly improve the efficiency of symbolic model checking of state/event models. It makes possible automated verification of large industrial designs with the use of only modest resources (less than 5 minutes on a standard PC for a model with 1421 concurrent machines). The results of the paper are being implemented in the next version of the commercial tool visualSTATETM.

General information
State: Published
Organisations: Department of Information Technology, Aalborg University
Contributors: Lind-Nielsen, J., Andersen, H. R., Hulgaard, H., Behrmann, G., Kristoffersen, K., Larsen, K. G.
Pages: 5-23
Publication date: 2001
Peer-reviewed: Yes

Publication information
Journal: Formal Methods in System Design
Volume: 18
Issue number: 1
ISSN (Print): 0925-9856
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 1.84 SJR 0.445 SNIP 1.285
Web of Science (2017): Impact factor 0.825
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.03 SJR 0.682 SNIP 1.614
Web of Science (2016): Impact factor 1
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2 SJR 0.8 SNIP 1.999
Web of Science (2015): Impact factor 1.132
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 1.87 SJR 0.768 SNIP 1.667
Web of Science (2014): Impact factor 0.875
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 1.14 SJR 0.549 SNIP 1.2
Web of Science (2013): Impact factor 0.404
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 1.92 SJR 0.736 SNIP 1.835
Web of Science (2012): Impact factor 0.282
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 1.93 SJR 0.554 SNIP 1.418
Web of Science (2011): Impact factor 0.69
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.616 SNIP 1.414
Web of Science (2010): Impact factor 1.158
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.512 SNIP 1.13
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.471 SNIP 1.021
Scopus rating (2007): SJR 0.856 SNIP 1.669
Scopus rating (2006): SJR 0.662 SNIP 1.496
Scopus rating (2005): SJR 0.813 SNIP 2.072
Scopus rating (2004): SJR 0.579 SNIP 1.78
Scopus rating (2003): SJR 0.868 SNIP 1.546
Scopus rating (2002): SJR 0.712 SNIP 1.479
Scopus rating (2001): SJR 0.558 SNIP 1.396
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.558 SNIP 1.38
Scopus rating (1999): SJR 0.582 SNIP 1.701
Original language: English
Keywords: Formal verification, Symbolic model checking, Backwards reachability, Embedded software
DOIs:
10.1023/A:1008736219484
Source: orbit
Source-ID: 170244
Research output: Research - peer-review » Journal article – Annual report year: 2001