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Software verification

- The verification of programs handling singly-linked lists is directly amenable to the verification of counter automata, for which dedicated tools (e.g. ARMC, FAST or ASPIC) can be used. This method is implemented in the L2CA tool. More details can be found in:
  - A. Bouajjani, M. Bozga, P. Habermehl, R. Iosif, P. Moro and T. Vojnar. Programs with Lists are Counter Automata (CAV 2006) VERIMAG TR-2006-3
  - M. Bozga and R. Iosif. On Flat Programs with Lists (VMCAI 2007) VERIMAG TR-2006-5
  - M. Bozga, R. Iosif and S. Perarnau. Quantitative Separation Logic and Programs with Lists. VERIMAG TR-2007-9
- Programs handling doubly-linked lists, trees and trees with regular pointers (e.g. trees with parent pointers, root pointers, or trees in which all leaves are kept in a list) are dealt with using tree automata as over-approximations of sets of reachable configurations. This technique is implemented in the ARTMC tool. More details can be found in:
  - P. Habermehl, R.Iosif, A. Rogalewicz and T. Vojnar. Proving Termination of Tree Manipulating Programs (ATVA 2007) VERIMAG TR-2007-1
- We have recently addressed the verification of programs with integer arrays using a new decidable logic for arrays. More details can be found in:
  - P. Habermehl, R. Iosif and T. Vojnar. What else is decidable about integer arrays? (FOSSACS 2008)
- Counter automata are central to the verification techniques we deploy. An important decidable class is called flat counter automata. We have implemented a library, called FLATA, for building and analyzing such models. More details can be found in:
  - M. Bozga, R. Iosif and Y. Lakhnech. Flat Parametric Counter Automata (ICALP 2006) VERIMAG TR 2005-15
  - M. Bozga, R. Iosif and V. Sfyrla. An Efficient Algorithm for the Computation of Optimum Paths in Weighted Graphs (MEMICS 2007)

Selected Publications:

Journals

- M. Bozga, R. Iosif, Y. Lakhnech. Flat Parametric Counter Automata. Fundamenta Informaticae, Volume 91 (2), 275 - 303, IOS Press (2009)
- R. Iosif. Symmetry Reductions for Model Checking of Concurrent Dynamic Software. Software Tools for Technology Transfer (STTT), Vol. 6, No. 4, 302 - 319, Springer-Verlag (2004).
- R. Iosif, M. Dwyer, J. Hatcliff. Translating Java for Multiple Model Checkers: the Bandera Back End. Formal Methods in System Design (FSMD), Vol. 26, No. 2, Kluwer Academic Publishers (2005).
- R. Iosif, R. Sisto. Temporal Logic Properties of Java Objects. Journal of Systems and Software, Volume 68, Issue 3, 243-251, Elsevier Science Inc (2003).
- C. Demartini, R. Iosif, R. Sisto. A Deadlock Detection Tool For Concurrent Java Programs. Software: Practice & Experience, Volume 29, Issue 7, (June 1999), 577 – 603.

Conferences

2009

- R. Iosif, A. Rogalewicz. Automata-based Termination Proofs. CIAA'09
- M. Bozga, C. Girlea, R. Iosif. Iterating Octagons. TACAS'09
- M. Bozga, P. Habermehl, R. Iosif, F. Konecny, T. Vojnar. Automatic Verification of Integer Array Programs. CAV'09

2008

- P. Habermehl, R. Iosif, T. Vojnar. A Logic of Singly Indexed Arrays. LPAR'08
- M. Bozga, R. Iosif, S. Perarnau. Quantitative Separation Logic and Programs with Lists. IJCAR'08
- P. Habermehl, R. Iosif, T. Vojnar. What Else is Decidable About Integer Arrays? FOSSACS'08

2007

- M. Bozga, R. Iosif, V. Sfyrla. An Efficient Algorithm for the Computation of Optimum Paths in Weighted Graphs. MEMICS'07
- P. Habermehl, R. Iosif, A. Rogalewicz, T. Vojnar. Proving Termination of Tree Manipulating Programs. ATVA'07
- M. Bozga, R. Iosif. On Flat Programs with Lists. VMCAI'07

2006

- M. Bozga, R. Iosif and Y. Lakhnech. Flat Parametric Counter Automata. ICALP'06, extended version in Fundamenta Informatica 91 (2), 275 - 303.
- A. Bouajjani, M. Bozga, P. Habermehl, R. Iosif, P. Moro and T. Vojnar. Programs with Lists are Counter Automata. CAV'06
- P. Habermehl, R. Iosif and T. Vojnar. Automata-based Verification of Programs with Tree Updates. TACAS'06

2005

- M. Bozga and R. Iosif. Quantitative Verification of Programs with Lists. VISSAS'05
- M. Bozga and R. Iosif. On Decidability within the Arithmetic of Addition and Divisibility. FOSSACS'05

2004

- M. Bozga, R. Iosif and Y. Lakhnech. On Logics of Aliasing. SAS'04
- M. Bozga, R. Iosif. On Model Checking Generic Topologies. LRPP'04

Participation on Research Projects:

- VERDYN (French National Young Researchers Grant)
- DYNAMO (ACI French National Project)
- AVERILES (RNTL French National Project)