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Ganzinger, Harald; **Hagen, George**; **Nieuwenhuis, Robert**; **Oliveras, Albert**; **Tinelli, Cesare**
DPLL(T): Fast decision procedures. (English) Zbl 1103.68616
Alur, Rajeev (ed.) et al., Computer aided verification. 16th international conference, CAV 2004, Boston, MA, USA, July 13–17, 2004. Proceedings. Berlin: Springer (ISBN 3-540-22342-8/pbk). Lecture Notes in Computer Science 3114, 175-188 (2004).

Summary: The logic of equality with uninterpreted functions (EUF) and its extensions have been widely applied to processor verification, by means of a large variety of progressively more sophisticated (lazy or eager) translations into propositional SAT. Here we propose a new approach, namely a general DPLL(X) engine, whose parameter X can be instantiated with a specialized solver Solver$_T$ for a given theory T, thus producing a system DPLL(T). We describe this DPLL(T) scheme, the interface between DPLL(X) and Solver$_T$, the architecture of DPLL(X), and our solver for EUF, which includes incremental and backtrackable congruence closure algorithms for dealing with the built-in equality and the integer successor and predecessor symbols. Experiments with a first implementation indicate that our technique already outperforms the previous methods on most benchmarks, and scales up very well.

For the entire collection see [Zbl 1056.68003].

MSC:

68Q60 Specification and verification (program logics, model checking, etc.)

Cited in **1** Review
Cited in **39** Documents

Full Text: DOI

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