

Invited Talk: Challenges in Bit-Vector Reasoning

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Abstract

The theory of fixed-size bit-vectors in Satisfiability Modulo Theories is essential in bit-precise reasoning applications. The dominant state-of-the-art approach for solving bit-vector formulas is a technique called bit-blasting, an eager reduction of bit-vectors to SAT. While surprisingly efficient in practice, bit-blasting may not scale for large bit-vectors or if bit-vector arithmetic is involved. In this talk, I will highlight challenges in reasoning over bit-vectors and discuss the current state of bit-level and word-level approaches.

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