

Model checking recursive programs

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Pushdown automata are a well-known formalism from formal-language theory; essentially, they are finite-state automata extended with a stack. They provide a convenient formal model for modelling the behaviour of programs with procedures, where the stack is used to ensure that procedure calls are dealt with faithfully.

Pushdown systems are an instance of infinite-state systems that are amenable to efficient verification. For instance, they can be used to verify boolean abstractions of C programs, a task performed by the Static Driver Verifier developed by Microsoft. The talk will discuss the theoretical backgrounds of pushdown model checking, basic verification algorithms, and existing tools. We will also consider some existing approaches to extend the technique to multithreaded programs.