

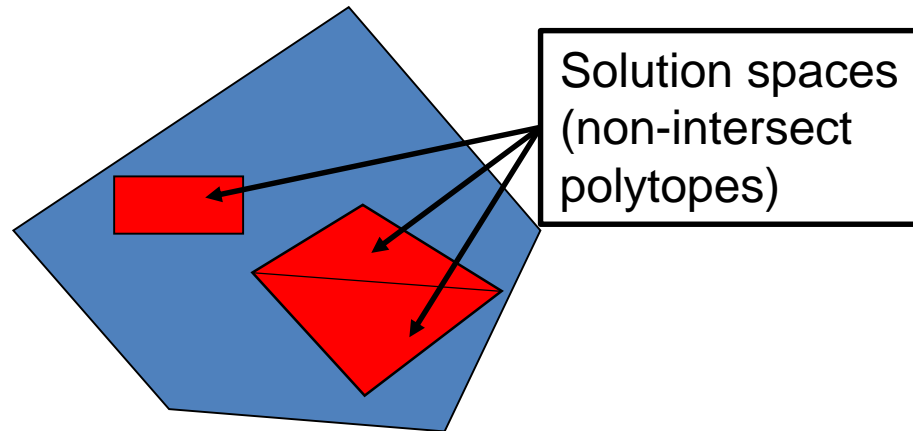
SharpSMT: A Scalable Toolkit for Measuring Solution Spaces of SMT(LA) Formulas

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Problems & Ideas

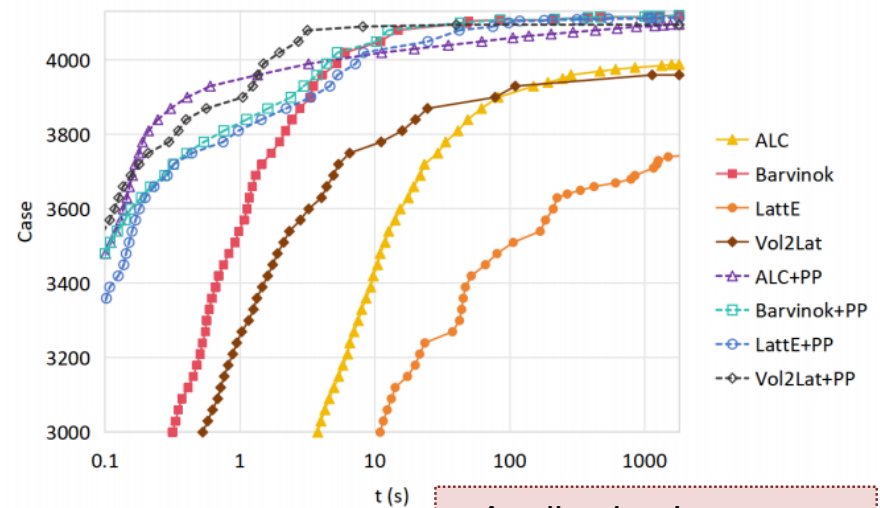
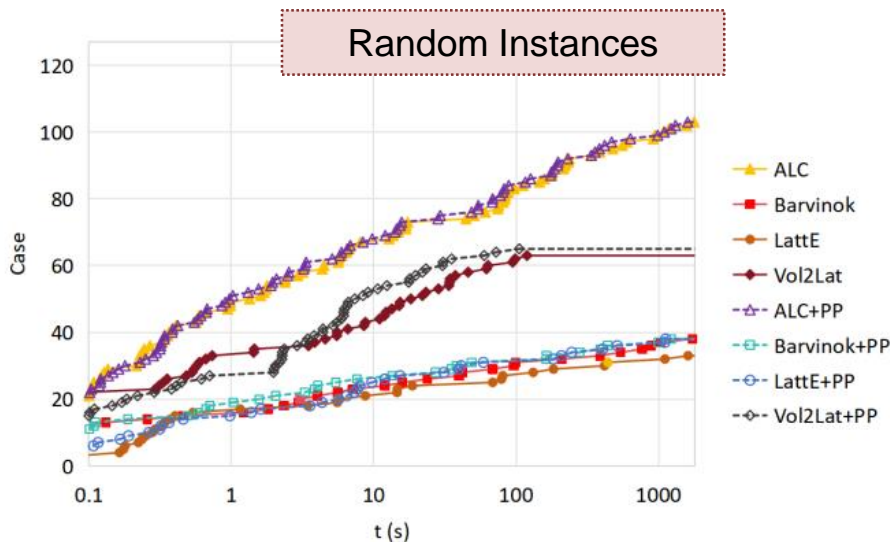
- Problems:
 - How to design a scalable counting framework for various SMT theories?
 - How to improve the efficiency of measuring solution spaces of SMT(LA) formulas?



- Ideas:
 - Intuitively, the solution space of an SMT(LA) formula can be viewed as the union of many polytopes.
 - So we design **new preprocessing techniques** to reduce the computations on polytopes, such as, **factorization techniques, variable elimination, cache strategy**, etc.

Main Contributions

- Contributions:
 - A toolkit called SharpSMT for #SMT(LA) problems is presented, which is integrated with abundant tools for polytopes subroutines, such as, Vinci, PolyVest, ALC, Barvinok, etc;
 - To reduce the computations of polytope subroutines, various new preprocessing techniques for polytopes are proposed;
 - Experimental results show that the new preprocessing techniques are very effective, especially on application instances.



Application Instances