Isomorph-Free Exhaustive Generation in SAT Solving

Tutorial

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This tutorial will provide an introduction to methods for exhaustively generating combinatorial objects while avoiding isomorphic copies of those objects. The "recorded objects" and "orderly generation" methods from the symbolic computation literature will be described and contrasted with the "symmetry breaking" approach from the satisfiability literature. A method of combining isomorph-free exhaustive generation with a SAT solver will be applied to two problems and shown to improve the performance of the solver by orders of magnitude. It will be argued there is great potential to be unlocked by exploiting both the symbolic and SAT approaches simultaneously.

References

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