SAT Solving – Introduction

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- Introduction
- SAT Problems
- Stochastic Search
- Systematic Search
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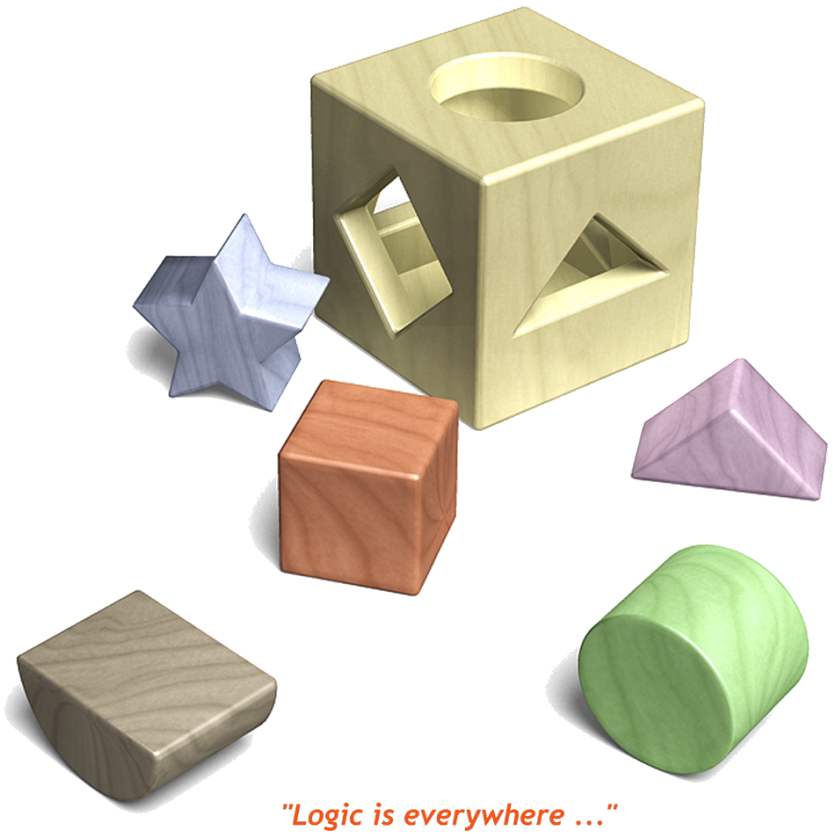

"Logic is everywhere ..."

Introduction

- SAT problems are well known problems and have been studied in Computer Science and Mathematical Logic for many years
  - What is the oldest reference?
  - What other areas are concerned with SAT problems?
- Complexity Theory was developed while studying SAT problems
  - S. A. Cook: The Complexity of Theorem-Proving Procedures. In: Proceedings of the 3rd Annual ACM Symposium on Theory of Computing, 151-158: 1971
- Many other combinatorial optimization problems can be reduced to SAT
- Modern SAT solvers can solve problems with up to 10^7 variables
- There are many real-world applications
  - Can you name some?
- There are still many open problems

Remarks

- Exercises will be theoretical as well as practical
- You may organize yourself in groups of up to three students
- We will ask the groups to encode some real world problems as SAT-problems
- Tutorials will start next week
- Reading Assignment until next week:
  - S. A. Cook: The Complexity of Theorem-Proving Procedures. In: Proceedings of the 3rd Annual ACM Symposium on Theory of Computing, 151-158: 1971.
- SAT Competition `http://satcompetition.org/2014/`