问题讨论

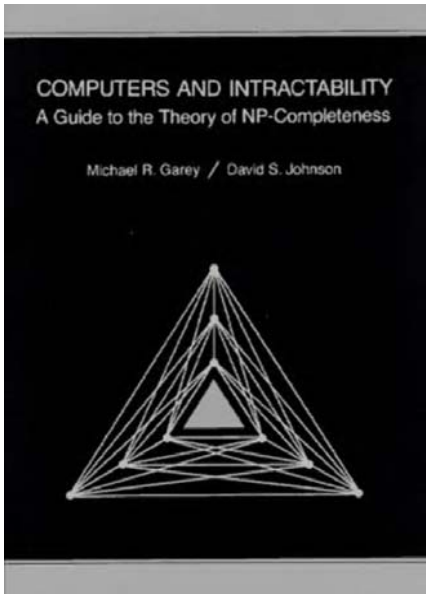
2013-11-29

SAT问题

SATISFIABILITY

INSTANCE: A set U of variables and a collection C of clauses over U.
QUESTION: Is there a satisfying truth assignment for C?

For example, $U = \{u_1, u_2\}$ and $C = \{\{u_1, \bar{u}_2\}, \{\bar{u}_1, u_2\}\}$ provide an instance of SAT for which the answer is "yes." A satisfying truth assignment is given by $t(u_1) = t(u_2) = T$. On the other hand, replacing C by $C' = \{\{u_1, u_2\}, \{u_1, \bar{u}_2\}, \{\bar{u}_1\}\}$ yields an instance for which the answer is "no"; C' is not satisfiable.



3SAT问题

3-SATISFIABILITY (3SAT)

INSTANCE: Collection $C = \{c_1, c_2, \ldots, c_m\}$ of clauses on a finite set U of variables such that $|c_i| = 3$ for $1 \leqslant i \leqslant m$.

QUESTION: Is there a truth assignment for U that satisfies all the clauses in C?

- 1. 写一个程序，输入m, n(>=3);输出m个子句，每个子句中有从n个变量中随机取得的三个。
- 例如m = 3,n = 5
- （x_1, ~x_2, x_3）,(x_2,x_4,~x_5),(~x_3,x_2,x_5)

- 2. 扩展上面的程序，加入新的代码让程序
  - 输出随机产生的合取范式
  - 输出该合取范式是否是可满足的，如果是给出相应的变量赋值。