

GSAT

procedure $GSAT(S)$

input: set of clauses S

output: interpretation I such that $I \models S$ or *don't know*

parameters: integers $MAX-TRIES$, $MAX-FLIPS$

begin

repeat $MAX-TRIES$ times

$I :=$ random interpretation

if $I \models S$ then return I

repeat $MAX-FLIPS$ times

$p :=$ an atom such that $flip(I, p)$ satisfies

the maximal number of clauses in S

$I = flip(I, p)$

if $I \models S$ then return I

return *don't know*

end

GSAT with random walks

procedure *GSATwithWalks*(S)

input: set of clauses S

output: interpretation I such that $I \models S$ or *don't know*

parameters: integers *MAX-TRIES*, *MAX-FLIPS*

real number $0 \leq \pi \leq 1$ (probability of a sideways move),

begin

repeat *MAX-TRIES* times

$I :=$ random interpretation ; if $I \models S$ then return I

repeat *MAX-FLIPS* times

with probability π

$p :=$ an atom such that $flip(I, p)$ satisfies the maximal number of clauses in S

with probability $1 - \pi$

randomly select p among atoms occurring in clauses false in I

$I = flip(I, p)$; if $I \models S$ then return I

return *don't know*

end

WSAT

procedure $WSAT(S)$

input: set of clauses S

output: interpretation I such that $I \models S$ or *don't know*

parameters: integers $MAX-TRIES$, $MAX-FLIPS$

begin

repeat $MAX-TRIES$ times

$I :=$ random interpretation

if $I \models S$ then return I

repeat $MAX-FLIPS$ times

randomly select a clause $C \in S$ such that $I \not\models C$

randomly select an atom p in C

$I = flip(I, p)$

if $I \models S$ then return I

return *don't know*

end