

Quiz #4. Logical reasoning

Write a propositional formula (in CNF) modeling 4-queens problem.

Formulate description of formula in the Disjunctive Normal Form.

Suggest algorithm to verify if a formula in DNF is satisfiable.

How can a formula (in CNF) be simplified after we assign a value to some propositional variable?

If we simplify a formula after removing a pure symbol, can a new pure symbol appear? And what a new unit clause?

If we simplify a formula after satisfying a unit clause, can a new pure symbol appear? And what a new unit clause?

Which uninformed search algorithm is used within the DPLL algorithm?

Describe how watched literals simplify checking whether a clause becomes a unit clause.

What is the difference between knowledge base and database?

What is a model of propositional formula?

Define entailment using the notions of models.

Define satisfiability of formula using the notions of models.

Show by resolution that formula $(A \vee \neg B) \wedge (\neg A \vee B)$ is satisfiable. Find its model.

Describe forward chaining in terms of resolution.

Why is forward chaining called a data-driven method?

How do clauses must look like to be able to use forward chaining?

Describe backward chaining in terms of resolution.

Why is backward chaining called a goal-driven method?

Take example from Wumpus world at slide 9 and prove formally that cell (2,2) is safe after having both observations from cells (1,2) and (2,1).

Assume a graph-coloring problem. How do you encode it as a satisfiability problem?