Lecture 4 – Theory of Computing – Resolution Refutation

Conjunctive Normal Form (CNF):

* Conjunction of disjunctions
* CNF formula: (p ∨ q) ∧ (¬p ∨ r )
* Not a CNF formula: (p ∨ q) ∧ (¬p ∧ q ∨ r )
* Basically, we’re trying to get rid of all arrows/implications, and have the ∧ (and) in between two formulas (with ∨ inside the brackets

Steps:

A screenshot of a computer

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Example of conversion to CNF:

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Clausal form:

A screenshot of a computer program

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Resolution rule:

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* We “neutralise” c and ¬c (like +1 and -1 = 0), they both get rid of one another, and then we find the union of both formulas, which are: a, b and ¬e. Therefore our resolvent C = {a, b, ¬e}

Resolution procedure:

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Connecting Resolution Refutation (RF) to logical entailment:

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