Lab-06

Knowledge Base using propositional logic & show that given query entails the knowledge base or not.

→ For give KB & query you should write truth table values to demonstrate whether given query entails KB or not.

→ implementation of truth-table enumeration for deciding propositional entailment.

Sol:

KB consists of propositional statements like (A, B, A ∧ B → C)

Query is proposition we want to check if it follows from the KB.

Algorithm

function TT-ENTAILS?(KB, α) returns true or false

inputs: KB, the knowledge base, a sentence in propositional logic

α, the query, a sentence in propositional logic

symbols ← a list of proposition symbols in KB & α

return TT-CHECK-ALL(KB, α, symbols, { })

function TT-CHECK-ALL(KB, α, symbols, model)

returns true or false.

if EMPTY?(symbols) then

if PL-TRUE?(KB, model) then return PL-TRUE?(α, model)

else return true

else do

P ← FIRST(symbols)

rest (REST (symbols))
return (TT-CHECK-ALL(KB, α, rest, model ∪ {P: true})
and
TT-CHECK-ALL(KB, α, rest, model ∪ {P = false}))

Truth table & output

Enter symbols: A, B, C
Enter Knowledge base using operators:
implies(not["A"], not["B"] and not["C"])
Enter query: not["B"]

Truth table

A	B	C	KB	Query
T	T	T	T	T
T	T	F	F	T
T	F	T	F	F
T	F	F	F	F
F	T	T	T	T
F	T	F	F	T
F	F	T	T	F
F	F	F	F	F

Does KB entail the query? F

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