

Artificial Intelligence - Lab 4

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February 24, 2015

Inference rules

- $$\begin{aligned} \{\alpha \Rightarrow \beta, \alpha\} &\vdash \beta & (1) \\ \{\alpha \Rightarrow \beta, \neg\beta\} &\vdash \neg\alpha & (2) \\ \{\alpha \wedge \beta, .\} &\vdash \alpha & (3) \\ \{\alpha, \beta\} &\vdash \alpha \wedge \beta & (4) \\ \{\alpha, .\} &\vdash \alpha \vee \beta & (5) \\ \{\alpha \vee \beta, \neg\alpha\} &\vdash \beta & (6) \\ \alpha \Leftrightarrow \beta &\equiv \beta \Leftrightarrow \alpha & (7) \\ \alpha \Leftrightarrow \beta &\equiv (\alpha \Rightarrow \beta) \wedge \beta \Rightarrow \alpha & (8) \\ \alpha \Rightarrow \beta &\equiv \neg\alpha \vee \beta & (9) \\ \alpha \wedge \beta &\equiv \beta \wedge \alpha & (10) \\ \alpha \vee \beta &\equiv \beta \vee \alpha & (11) \\ \neg(\alpha \wedge \beta) &\equiv \neg\alpha \vee \neg\beta & (12) \\ \neg(\alpha \vee \beta) &\equiv \neg\alpha \wedge \neg\beta & (13) \\ \neg\neg\alpha &\equiv \alpha & (14) \end{aligned}$$

Task 1 - Knowledge base

#	sentence
1	$P \Rightarrow Q$
2	P

Task 2 - Propositional symbols

symbol	meaning
R	it rains today
...	...

Task 3 - Inference

#	inference rule	sentence
1-2	from KB	see above
3	rule 1 with 1+2	Q