

Artificial Intelligence Programming

Inference

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13-2: Logic-based agents

- The big picture: our agent needs to make decisions about what to do in a complex environment.
- In order to do this, it needs a model of the world.
- Logic is a language for representing this model.
- Our agent will maintain and update a *knowledge base* (KB) which stores this model.
- Our agent will use *inference* to derive new facts that are added to the KB.
- These new facts will help our agent make decisions.

13-3: Logic Summary

- Recall that propositional logic concerns:
 - facts about the world that are true or false.
 - These facts can be used to construct sentences using logical connectives ($\wedge, \vee, \neg, \Rightarrow, \Leftrightarrow$)
 - Example: $P_{1,1} \vee P_{2,2}$.
- We can convert these sentences to CNF and use resolution as an inference mechanism.
 - Resolution is sound and complete.