Planning
H_1
Heuristics

1 handout: slides
730W entries were due

EOLQs

Planning
H_1
Heuristics

Planning
- STRIPS
- Grocery World
- Progression

H_1

Heuristics

State-space Planning

STRIPS

Planning
STRIPS
Grocery World
Progression
H_1
Heuristics

Operator schema:

Parameters: Move(block, src, dest)
Preconditions: On(block, src), Clear(block), Clear(dest)
Delete list: On(block, src) Clear(dest)
Add list: On(block, dest) Clear(src)

Assume everything else is static. Closed world assumption.

Invented for Shakey (SRI).

Grocery World

Planning
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H_1

Heuristics

Initial: At(Home), Sells(HWS, Drill), Sells(SM, Milk), Sells(SM, Bananas)

Go (here,there)

Pre: At(here)

Post: At(there), ¬ At(here)

Buy(store,x)

Pre: At(store), Sells(store, x)

Post: Have(s)

Goal: At(Home), Have(Drill), Have(Milk), Have(Bananas)

Progression

Planning
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- Grocery World
- Progression

H_1

Heuristics

Initial state: initial state
Branch on all applicable actions
Applicable: preconditions hold
Effects: delete deletes, then add adds
Goal reached when all goal atoms are true.

H_1: A Simple Heuristic for Planning

Planning
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Heuristics
- Simple Heuristics
- Break
- Computing H_1
- Cake World
- EOLQs

Heuristics

Simple Heuristics

Planning
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Simple Heuristics
Break
Computing H_1
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$h(n) = 0$

number of unachieved goals

ignore delete effects: H_1

Break

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- asst 3
- project proposals: talk with me before March 28

Computing H_1

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$t \leftarrow 0$ (current time)

$Q \leftarrow I$ (literals that became true at t)

until all goals are true or Q is empty,

  $Q' \leftarrow \emptyset$

  foreach $l \in Q$,

    foreach a that has l as a precondition,

      if all of a's preconditions are now true,

        foreach add effect e of a,

          if e is not already true,

            record that e became true at $t + 1$

            add it to Q'

  $t \leftarrow t + 1$

  $Q \leftarrow Q'$

Then $\sum$ or $\max$ over goal.

Cake World

Planning
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Initial: Have(Cake)

Eat: Pre: Have(Cake)
Post: Eaten(Cake), ¬ Have(Cake)

Bake: Pre: ¬Have(Cake)
Post: Have(Cake)

Goal: Have(Cake), Eaten(Cake)

EOLQs

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- What question didn't you get to ask today?
- What's still confusing?
- What would you like to hear more about?

Please write down your most pressing question about AI and put it in the box on your way out.
Thanks!