aimacode / **aima-pseudocode**

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norvig Merge pull request #36 from varuna82/patch-1   efbd20c on Mar 2

4 contributors

31 lines (25 sloc)   1.46 KB   Raw   Blame   History

ALPHA-BETA-SEARCH

AIMA3e

function ALPHA-BETA-SEARCH(*state*) **returns** an action
    v ← MAX-VALUE(*state*, $-\infty$, $+\infty$)
    return the *action* in ACTIONS(*state*) with value v

function MAX-VALUE(*state*, α, β) **returns** *a utility value*
    if TERMINAL-TEST(*state*) **the return** UTILITY(*state*)
    v ← $-\infty$
    for each *a* **in** ACTIONS(*state*) **do**
        v ← MAX(v, MIN-VALUE(RESULT(*state*, *a*), α, β))
        if $v \geq \beta$ **then return** v
        α ← MAX(α, v)
    return v

function MIN-VALUE(*state*, α, β) **returns** *a utility value*
    if TERMINAL-TEST(*state*) **the return** UTILITY(*state*)
    v ← $+\infty$
    for each *a* **in** ACTIONS(*state*) **do**
        v ← MIN(v, MAX-VALUE(RESULT(*state*, *a*), α, β))
        if $v \leq \alpha$ **then return** v

$$\beta \leftarrow \text{MIN}(\beta, v)$$
return *v*

Figure ?? The alpha-beta search algorithm. Notice that these routines are the same as the MINIMAX functions in Figure ??, except for the two lines in each of MIN-VALUE and MAX-VALUE that maintain *α* and *β* (and the bookkeeping to pass these parameters along).