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leaprovenzano Update Minimax-Decision.md 921c90c on Apr 18

3 contributors

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MINIMAX-DECISION

AIMA3e

```
function MINIMAX-DECISION(state) returns an action
  return arg max $_{a \in \text{ACTIONS}(s)}$ MIN-VALUE(RESULT(state, a))


function MAX-VALUE(state) returns a utility value
  if TERMINAL-TEST(state) then return UTILITY(state)
  $v \leftarrow -\infty$
  for each a in ACTIONS(state) do
      $v \leftarrow$ MAX(v, MIN-VALUE(RESULT(state, a)))
  return v


function MIN-VALUE(state) returns a utility value
  if TERMINAL-TEST(state) then return UTILITY(state)
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```

Figure ?? An algorithm for calculating minimax decisions. It returns the action corresponding to the best possible move, that is, the move that leads to the outcome with the best utility, under the assumption that the opponent plays to minimize utility. The functions MAX-VALUE and MIN-VALUE go through the whole game tree, all the way to the leaves, to determine the backed-up value of a state. The notation $\text{argmax}_{a \in S}\ f(a)$ computes the element *a* of set *S* that has maximum value of *f*(*a*).