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

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

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

Figure 5.7 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).