

Search cutoff

Boardgames are available in majors' room: Othello & Checkers!

Our previous algorithms (minimax and α - β) had:

if (terminal state) return utility

We now replace this with:

if (should cutoff) return evaluation

- Example of cutoff test: ← ask for input on this

if (depth \geq MAX_DEPTH or evaluation $<$ BAD_SCORE)
return true;

- Example of evaluation: See qs 5-9 in the textbook, where
$$\text{Eval}(s) = (3X_2(s) + X_1(s)) - (3O_2(s) - O_1(s))$$
for tic-tac-toe.

- How about for Othello?

Could try

$$\text{Eval}(s) = \text{score} + c_1 \times \text{NumCorners} + c_2 \times \text{NumEdges} + ???$$

do sq (b)-(e)
in class or as
exercise

- Check out the Russell slides, p21-24.

- Note that exact value of utility & eval fn don't affect strategy (invariant to monotonic transformations).

- Note the summary of state-of-the-art programs for common deterministic games (chess, checkers, othello, go).

• See p174 of the textbook for discussions about quiescence and the horizon effect

• (Optional)

See also the very cool 1997 paper, "Checkers is Solved", by Schaeffer et al.