

CS/ENGRI 172, Fall 2002
9/11/02: Lecture Six Handout

Topics: Game playing.

Announcements:

- As a commemoration suggested by the Governor and Dean of the Faculty, we will have a moment of silence, marked by tolling of the Cornell Chimes, at 10:10 and 10:29 today.
- We are seeking a volunteer to help take notes for students with registered disabilities. These students are taking their own set of notes, but the University has recognized their need for “backup”. If you’re a careful notetaker and regular attendee, it would be great if you could help out! If interested, please contact me by email (for confidentiality reasons).

Computer chess highlights

1845: Babbage discusses getting a machine to play chess.

late 1800’s: Torres y Quevedo builds a machine for three-piece (king and rook vs. king) endings.

1950’s: Turing and Shannon (founders of computer science and information theory, respectively) propose searching path trees, elementary programs.

1957: Bernstein writes first program for full game.

1958: first documented human defeat (human taught rules just before the game).

The interim: Programmers and humans both confidently predict ultimate victory for their “sides”.

Slow but steady progress in program development.

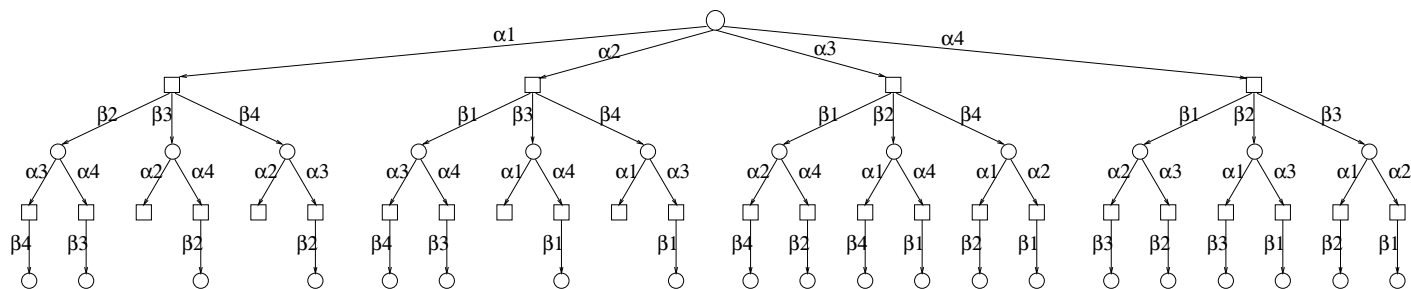
1988: Deep Thought defeats a human grandmaster in a match game, but world champion Kasparov defeats it easily.

1996: Kasparov vs. Deep Blue. Kasparov loses the first game, but wins the six-game match.

1997: Deep Blue wins the rematch, and subsequently is retired.

Game trees

Here is the game tree for the 3-game. ○: corresponding state has player 1 move next; □: corresponding state has player 2 move next.



The *minimax score* of a node (in a zero-sum game, with respect to a given assignment of values to the game tree’s leaf nodes) is the eventual benefit to player 1, assuming optimal play by all parties, of being in the state corresponding to that node. We can compute the minimax score of any internal node if we know the minimax scores of all its children.