Game Trees

Wednesday, April 1, 2020 12:34 AM

Formal Representation - Tree

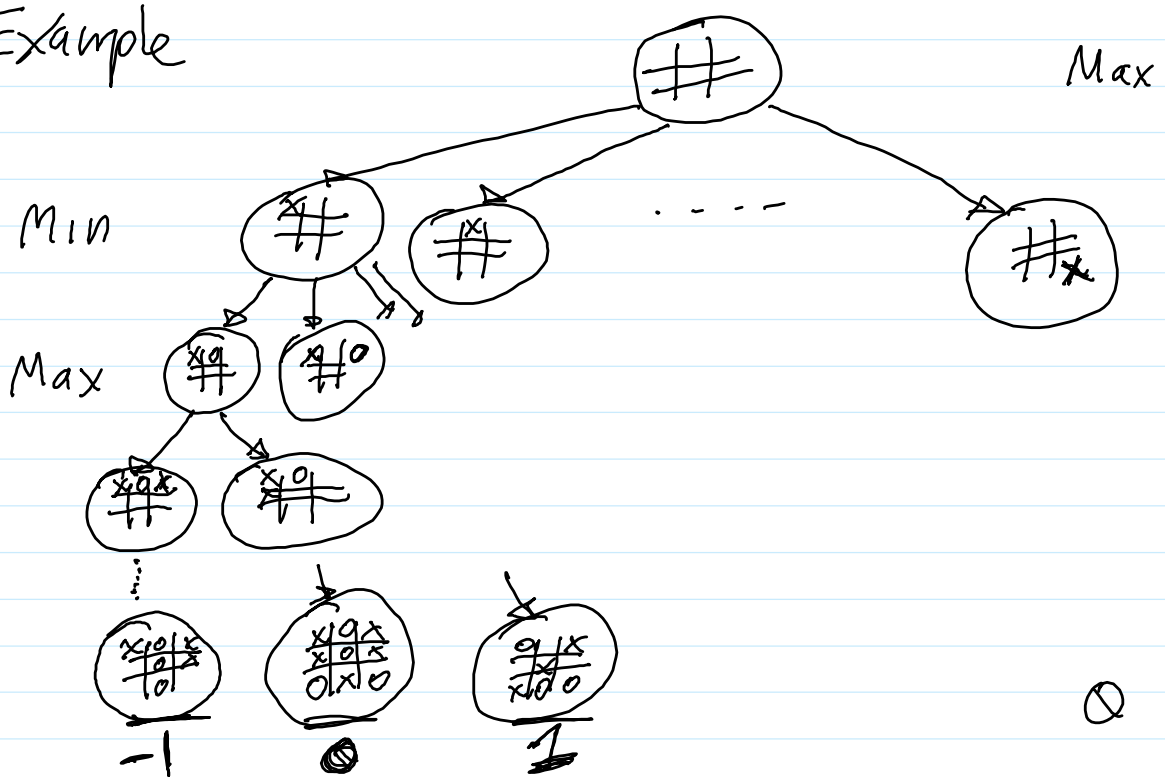
- node - a state of the game
- arc - an action that takes game from one state to another

root So initial game setup.

Player(s) - player to move
Actions(s) - set of legal moves at state s
Result(s,a) - transition function
Terminal(s) - true if s is an end-state
Utility(s) - score of players at a terminal state s

- { MAX ← Utility(s) Max goes first.
  MIN

Example



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- The minimax(s) =

$$\begin{cases} \text{utility}(s) & \text{terminal}(s) \\ \max_{a \in \text{Actions}(s)} \text{Minimax}(\text{Result}(s,a)) & \text{Player}(s) = \text{MAX} \\ \min_{a \in \text{Actions}(s)} \text{Minimax}(\text{Result}(s,a)) & \text{Player}(s) = \text{MIN} \end{cases}$$

Example: