Playing Like a Gambler

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Monte Carlo Tree Search

- Actually a family of algorithms
- Stochastic tree search algorithm
- Based on sampling outcome density

What is it Used For?

Funny you should aks. . .

- Go (smart people)
    - Complex game
    - No good heuristics
- Connect Four (me)
    - Simple game
    - Analytically "solved"

How Does it Work?

- Magic. . . and ponies!

Be Serious.

Fine.

```
MCTS()
  Pick a child node
  Simulate the rest of the game randomly
  Note who won
  Repeat until bored
```

That's Crazy Like a Walrus.

Or is it crazy like a walrus-fox?

- Algorithm makes intuituve sense
- Game simulated to the end
- Find action that is "most likely" to win

So What Did You Do With It?

One word: Connect Four

- Fixed maximum depth
- Fairly high branching factor
- Totally tree-like (no cycles)

Is There a Sweet Demo?

- Why yes, yes there is