

# Monte Carlo Search Tree and Its Applications

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# Outline

Introduction

Background

Applying MCTS to Go

Applying MCTS to Narrative Generation

Conclusion

# Monte Carlo Tree Search(MCTS)

- ▶ AI algorithm
- ▶ Populates tree by randomly sampling simulations
- ▶ Probabilistic not deterministic
- ▶ Useful for problems with large search spaces
  - ▶ Possible games of Chess:  $10^{120}$
  - ▶ Game board for Chess: 8x8
  - ▶ Possible games of Go:  $10^{761}$
  - ▶ Game board for Go: 19x19

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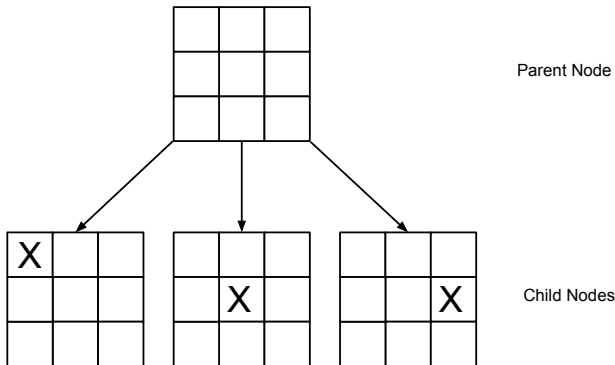
# Tree Structure

What the nodes encode

- ▶ intermediate state of the game
- ▶ estimated strategic value
- ▶ source node is the current game state

Edges in the tree represent actions

# TicTacToe Example



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