

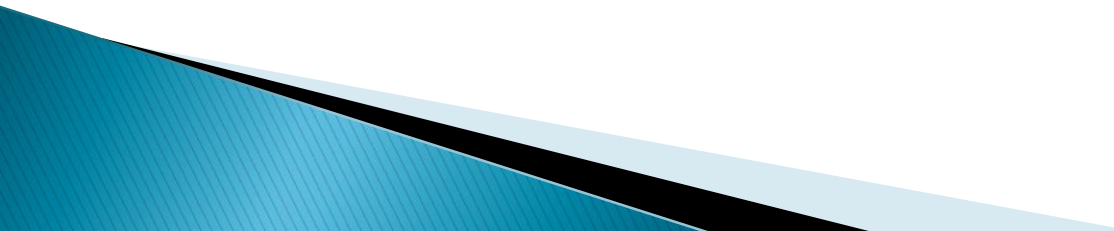
Let's GO!

Sun Kai
ACM CLASS

~~A Quick introduction to Go~~

- ▶ Liberty
- ▶ Eye

Outline

- ▶ ~~Background~~
 - ▶ Algorithm
 - ▶ Protocol
 - ▶ Test
 - ▶ Demonstration
 - ▶ Further works
- 
- A decorative graphic element in the bottom-left corner of the slide, consisting of overlapping blue and black geometric shapes.

~~Background~~

- ▶ Classical methods (1968 ~ 2005)
- ▶ Modern technology (2006 ~)
- ▶ 2006 - UCT

Algorithm

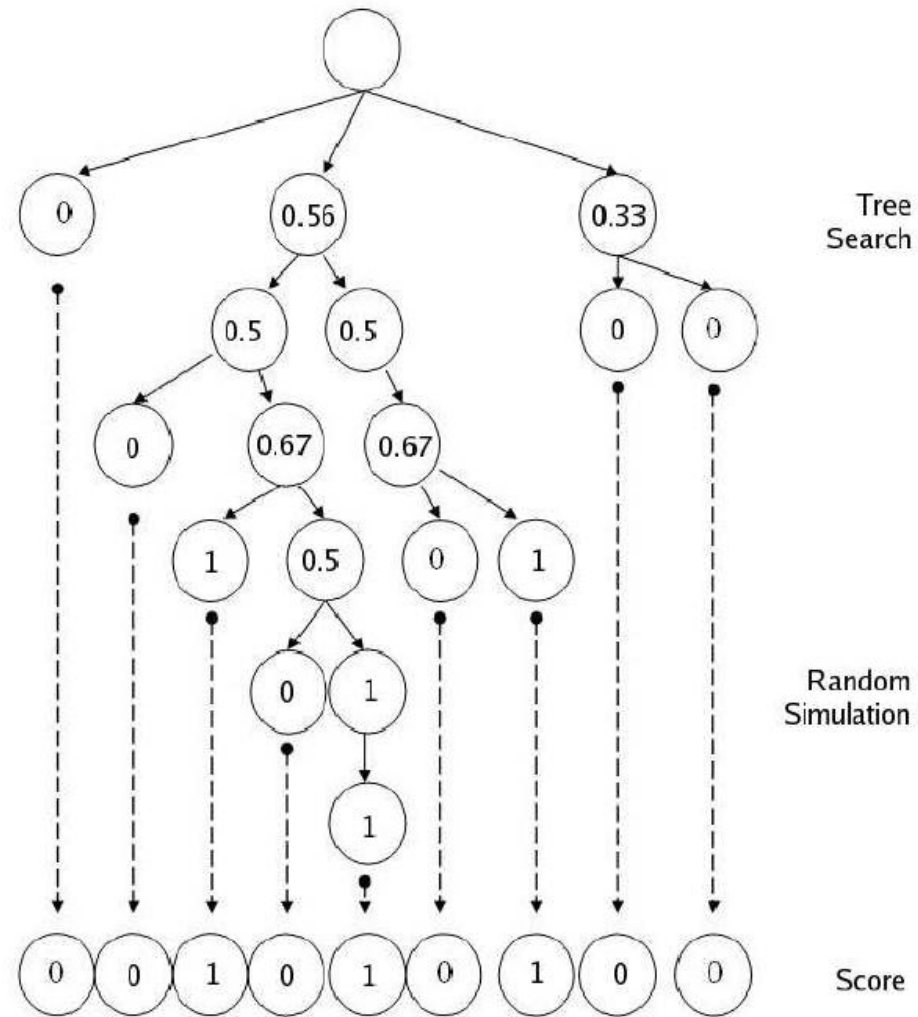
- ▶ Monte Carlo Simulation
- ▶ UCB (Upper Confidence Bounds)
- ▶ UCT (UCB applied to Trees)

UCB

- ▶ Multi-armed Bandit

$$\bar{x}_i + \sqrt{\frac{2 \log n}{n_i}}$$

UCT



UCT

- ▶ Improvements

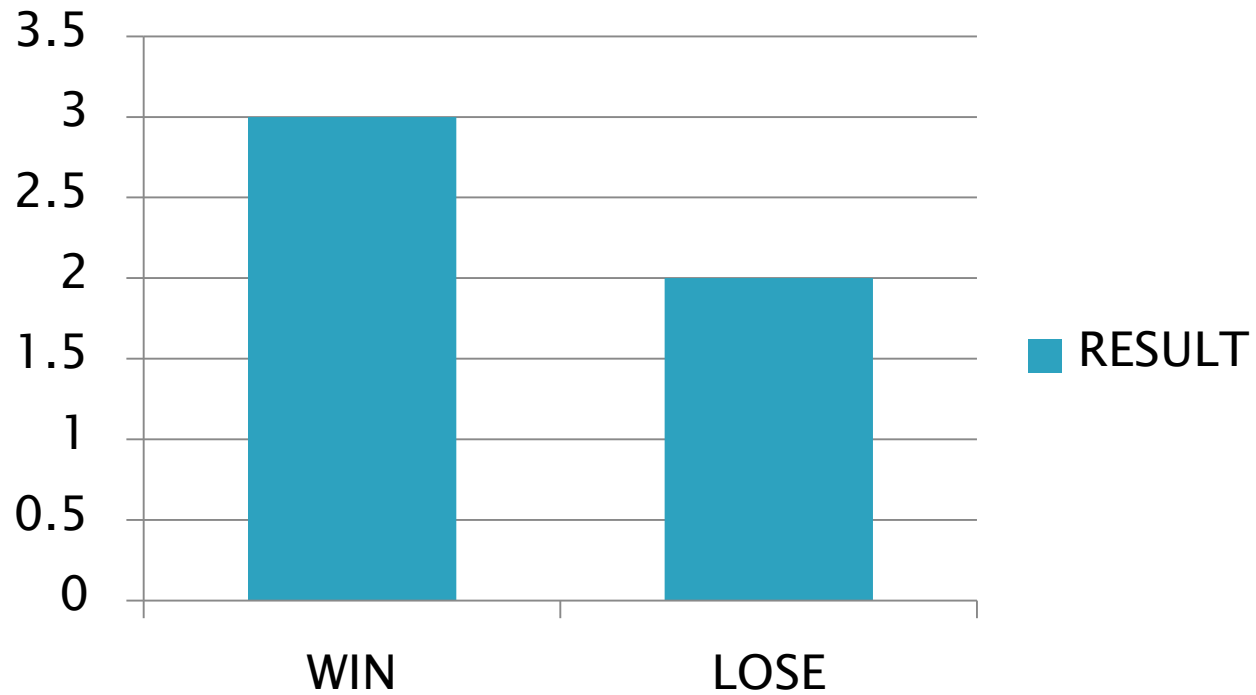
Protocol

- ▶ GTP (Go Text Protocol)

Test

▶ GNU Go

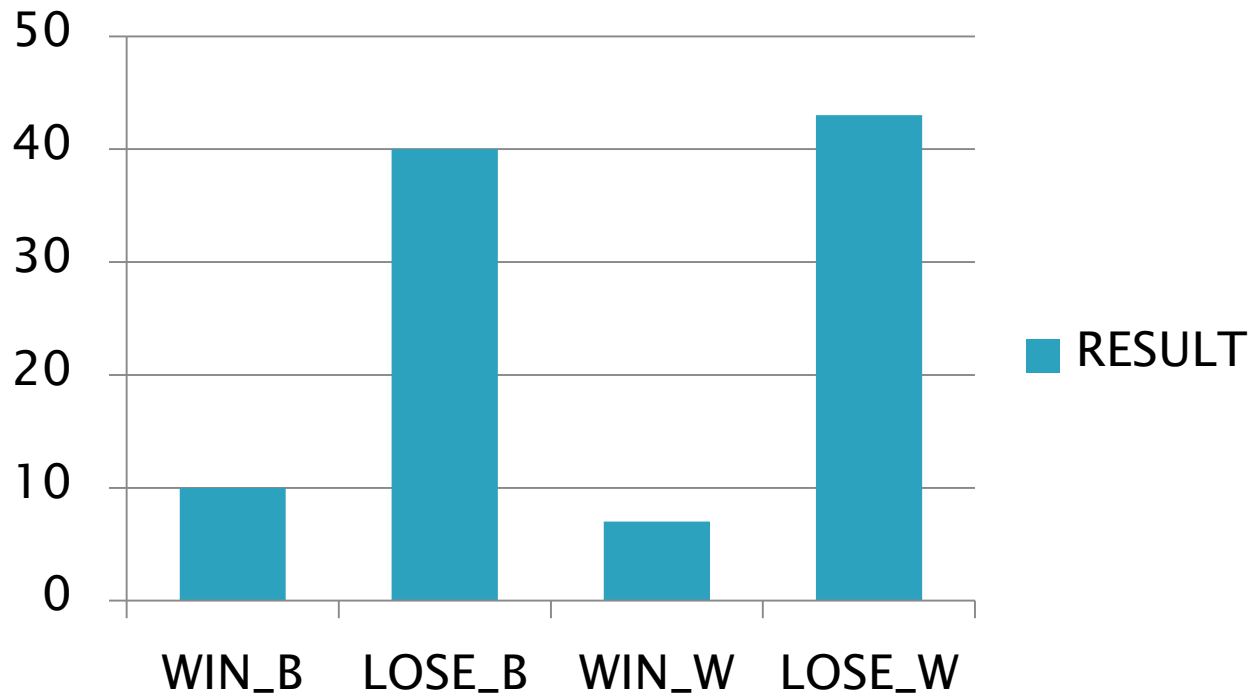
LetsGo vs GNUGo(level 1)



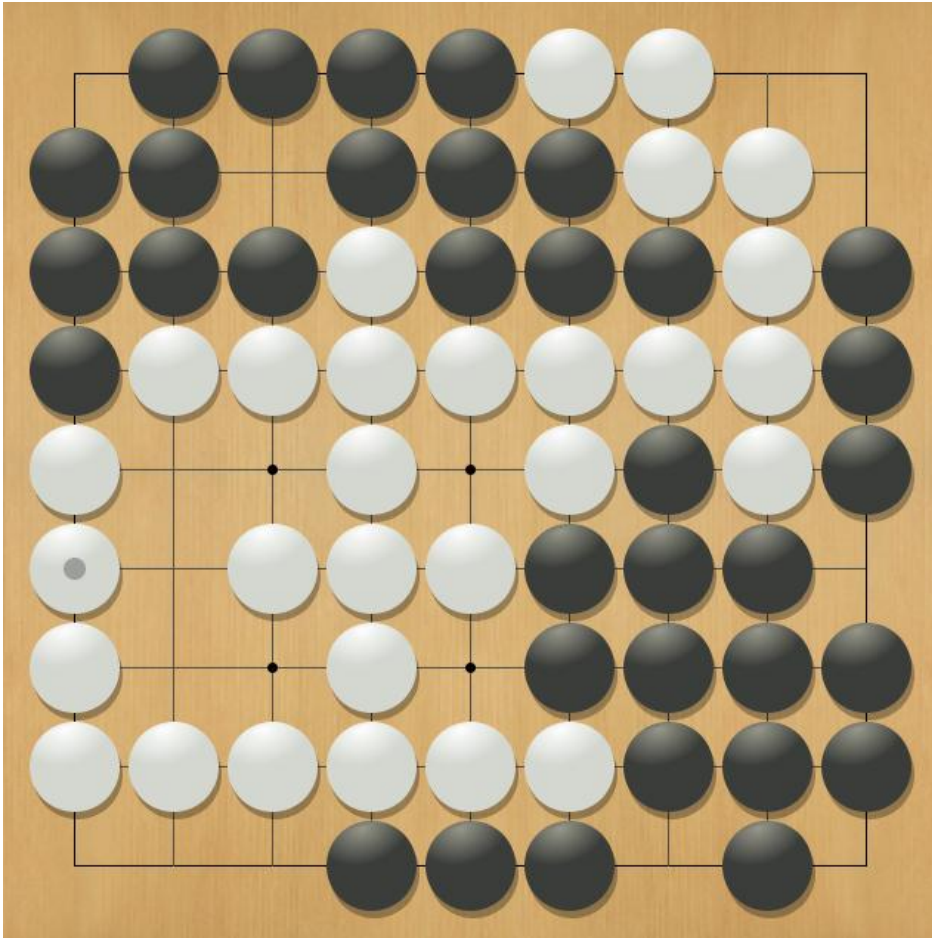
Test

► GNU Go

LetsGo vs GNUGo(level 10)



LetsGo vs Human

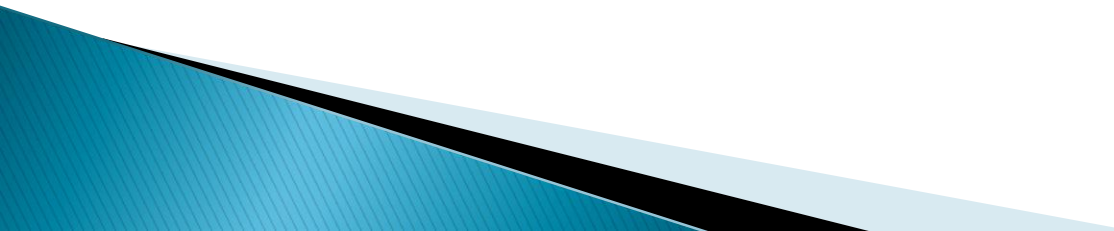


- ▶ $63(+7.5):18$
- ▶ $W+52.5$

Demonstration



Further works

- ▶ AMAF
 - ▶ Life and death problem
 - ▶ Parallel computation
 - ▶ Machine learning
- 

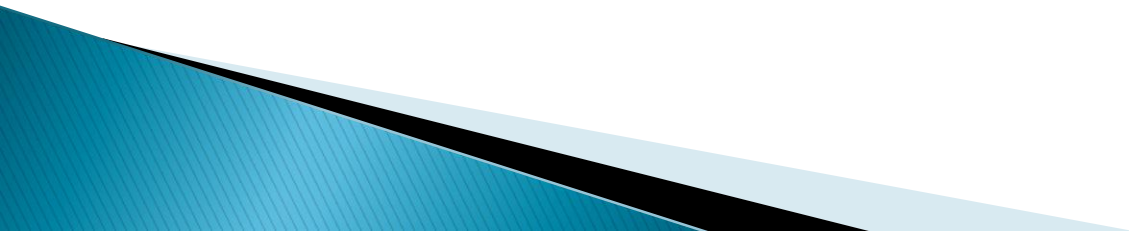
Reference

- ▶ B. Bouzy, B. Helmstetter “MONTE-CARLO GO DEVELOPMENTS”
 - ▶ Yizao Wang, Sylvain Gelly “Modifications of UCT and sequence-like simulations for Monte-Carlo Go”
 - ▶ Sylvain Gelly, Yizao Wang, Remi Munos, Olivier Teytau “Improvements in Monte-Carlo Computer-Go using UCT”
 - ▶ David P. Helmbold, Aleatha Parker-Wood “All-Moves-As-First Heuristics in Monte-Carlo Go”
 - ▶ Sylvain Gelly, David Silver “Combining Online and Offline Knowledge in UCT”
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Thanks

- ▶ Li Guanru

Q&A



Thank you!

