

Searching by learning: Exploring artificial general intelligence on small board games by deep reinforcement learning Wang, H.

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Stellingen

door Hui Wang, auteur van

Searching by Learning: Exploring Artificial General Intelligence on Small Board Games by Deep Reinforcement Learning

- 1. Classical Q-learning converges in General Game Playing slowly, and a simple Monte Carlo Search improves the speed. [This thesis. Chapter 2.]
- 2. The interaction impact between hyper-parameters suggests the need for balancing searching and learning in AlphaZero. [This thesis. Chapter 3.]
- 3. Summation of policy loss and value loss is not always the best loss function; it can serve as a default compromise choice. [This thesis. Chapter 4.]
- 4. Monte Carlo Tree Search enhancements can improve the start phase of AlphaZero. Properly determining the length of the start phase of using such enhancements can further improve the training. [This thesis. Chapter 5 & 6.]
- 5. AlphaZero-like self-play can be used to master complex single player combinatorial optimization game with a ranked reward mechanism which reshapes game outcome as win or loss. [This thesis. Chapter 7]
- 6. In deep reinforcement learning, searching and learning are usually combined to master different complex tasks, but it is hard to say which one is more important.
- 7. Self-play training heavily depends on the self-play examples, which suggests the importance of generating high quality training data, which can be provided by expert players.
- 8. We are still far away from achieving Artificial General Intelligence, although deep reinforcement learning has shown impressive ability of mastering a part of specific complex problems.
- 9. Just do it and never give up.
- 10. Life is like a game, everyone is a player. You can not change the game rules, but you can determine the objective you wish to achieve. It is impossible that every player is a winner, but it is possible that every player enjoys the process of playing the game.