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Summary of “AlphaGo by the Deep Mind”

“Go” is a Chinese ancient board game in which the goal is to surround more territory than the opponent. Go is similar to Chess in a sense that both Go and Chess require constructive strategies but Go is simple yet much more complex than Chess. The Deep Mind team (by Google) has created an AI agent called AlphaGo which recently was able to defeat a human professional Go player. This was thought impossible because unlike Chess, it’s impossible to simulate all possible combinations of a move.

AlphaGo used several algorithms to achieve the victory but some of the main ones include creating deep neural networks and it’s advanced search algorithm. It used ‘value networks’ to evaluate the board positions and ‘policy networks’ to choose the moves. The deep neural networks were created by self-reinforcement learning in which the agent played several times against itself and supervised learning where it learned from human experts. The search algorithm was a combination of Monte Carlo (MCTS) simulation and the deep networks.

What’s interesting about the MC Tree Search is that there is no pre-requisite knowledge required about the game. Other AI Go agents such as Fuego, Pachi, Crazy Stone etc. also use MCTS but what makes AlphaGo the best is its modification to the tree search and its ability to evaluate a move. What makes AlphaGo different from Deep Blue and other AI agents is that the tree search is guided by convolutional networks that are based on what the machine learned. They are not designed by experts and hence they improve significantly over time and iterations. This also means that AlphaGo evaluates its next move by predicting the human opponent’s move. That is what makes the artificial agent, an intelligent agent.