Research Review of the Article:

Mastering the game of Go with deep neural networks and tree search

by Egor Ermilov

Goals

The main goal was to find novel techniques to win the games with massive search spaces. The game of Go has an extremely large set of possible moves, it makes exploring even a part of the game tree unacceptably long, let alone the full tree.

Techniques

The researchers suggest a brand new approach – using three artificial neural networks:

– Policy network trained by real human games (supervised learning).
– Policy network trained by self-played games (reinforcement learning).
– Value network estimates the probability of having a position that leads to a win.

Results

Key results are:
– AlphaGo significantly outperforms all other computer Go programs with the winning rate of 99.8%
– A human professional Go player was defeated by AlphaGo
– AlphaGo used 40 search threads, 48 CPU and 8 GPU units, but it performs even better with more hardware.