AlphaGo and Machine Learning

7pm October 17, 2018 Room P-131

Presented by the Stony Brook Math Club

Abstract

Discrete time, perfect information games provide an ideal test setting for many modern reinforcement learning algorithms. Board games, in particular, have well defined rules and win objectives which make machine learning easier.In today's talk, we will be talking about the 2017 Alphazero algorithm and its breakthrough result in beating the top Go player in the world Ke Jie. We will be talking about the basic rules of go, followed by an overview of the Alphazero algorithm.

Alphazero is defined by a training phase and a testing phase. In each iteration of the training phase, Alphazero generates self-play games via Monte Carlo Tree Search and uses these new self-play games to retrain its policy/value neural network. The algorithm then iterates this process until it reaches a predetermined number of iterations, by which it then terminates. Depending on available time, we will go into the mathematical details of each component of the training phase. We will be discussing the exact mechanisms which make the algorithm work so well in practice.