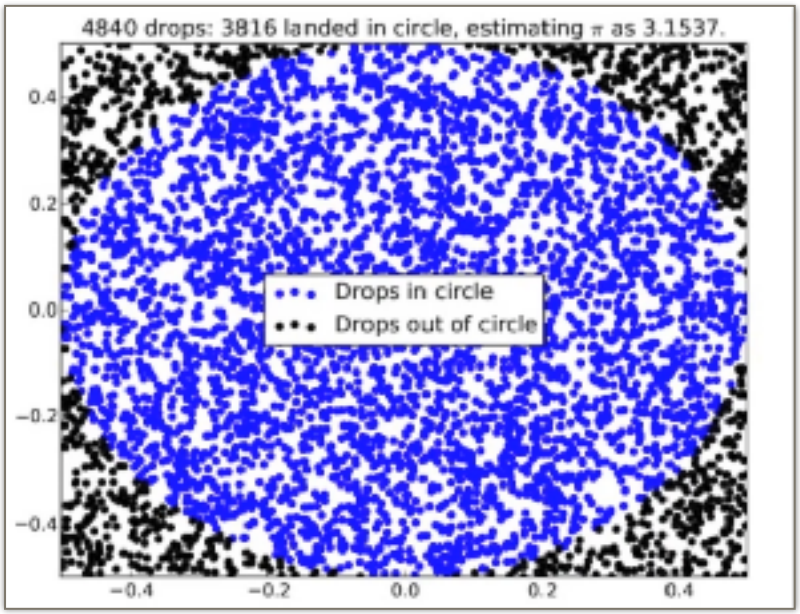
AlphaGo

As you know, AlphaGo is one of the most famous machine learning model in the world. In my country, South Korea, there was a Go challenge match with AlphaGo and Sedol Lee in last year. Go is a very ancient game and it's one of the most complex game. As you know, the result was a victory of AlphaGo. This was a very important milestone of AI.

Monte Carlo Search

There are many algorithms in AlphaGo. Q-learning, Deep learning, Monte Carlo Search, etc. I already studied Q-learning by MLND and Deep-Learning by DLND. So, I picked Monte Carlo Search for this report paper.

Monte Carlo Search is one of the most efficient method for problem without solution. It rely on Probability. We can find a solution after countless attempts. Although it should have a error, the error will very small. Instead of looking for correct answer, repeat the simulations and predict the solution from the experience.



Here is a example. Although we don't know about π, we can estimate this from simulations. In this example, we has 4840 times simulations and estimated π is 3.1537. Yes. Our result has some error. But, we can reduce this with more simulations. So, we can predict π quite well.

In AlphaGo, Monte Carlo Search is useful. Because, It is very difficult to define the evaluation function. Let's think about making a Pac-man AI. We can define evaluation function defend on score, Pac-man's location, etc. But, Go is one of the complex

game in the world. Monte Carlo Search can make the solution without evaluation function in this case.

AlPhaGo Zero

Recently, AlphaGo had a big development. It learned Go by itself without any Go record. Reinforcement learning is very important part of AI. So, there are a lot of algorithms about this. But, almost of that based in human's record. Therefore, AlphaGo Zero become a game changer in AI. The AI without initial inputting data will be the key of general AI machine. It is an interesting but scary story.