Study the artificial neural network (ANN) used in AlphaGo system for playing the game of Go, explain its structure and learning algorithm. Furthermore, by considering the game principle together, analyze the role of ANN in AlphaGo and the reasons behind such role.

Ref.: David Silver, Aja Huang, Chris J. Maddison, et al. Mastering the game of Go with deep neural networks and tree search. Nature, vol. 529, 484, Jan. 2016.

Deadline: before the exam.