Week 5

This week I mainly learned something about multi-objective optimization and finished my homework(approaching final exam).
1. Learned NSGA-II, read its related paper "A Fast and Elitist Multiobjective Genetic Algorithm: NSGA-II" and its introduction "Multi-objective Optimization Using Evolutionary Algorithms: An Introduction".
2. Organized the development of the multi-objective optimization. (see in the optimization folder).
3. Determined the direction of the paper, I will add above two goals into the problem of Game map generation. Or changing the GAN to construct a network trained by the map generation and playing agent.

Shortcoming: When I want to learn something about NSGA, I searched on the Internet and browsed blogs which confused me. A better way should be read related papers directly because I finally found that the paper is the clearest.

A Fast and Elitist Multiobjective Genetic Algorithm: NSGA-II

[1][2] The motivation is that using this algorithm we do not need to specify some parameters like the niche count in the fitness sharing method because these parameters domain the result of the implement.

Then another advantage is that non-dominated sorting time complexity is lower than other algorithms and the author use maintaining elitist individuals method to improve the effectiveness of Multi-Objective Genetic Algorithm.

References

[1] Kalyanmoy Deb, Amrit Pratap, Sameer Agarwal, and TAMT Meyarivan. A fast and elitist multiobjective genetic algorithm: Nsga-ii. *IEEE transactions on evolutionary computation*, 6(2):182–197, 2002.

[2] Kalyanmoy Deb. *Multi-objective optimization using evolutionary algorithms*, volume 16. John Wiley & Sons, 2001.