Question：What one or two things set you apart from other applicants? Have you placed well in CTFs, programming competitions, or hackathons? Have you done significant community service? Have you published peer-reviewed research? Have you received significant awards? Have you participated on a sports team or performance group?

Last September, I joined professor Feng Liu’s Reinforcement Learning group to study POMDP problem and propose suggestions for algorithm development. Curious to figure out the problems of the U-Tree algorithm, which gave worse experimental results than others did, I began to make careful analysis of each process of the algorithm and carry out a series of experiments, finding that this algorithm used redundant data and adopted all-permutations to obtain the optimal result, which greatly increased the algorithm's time and space complexity. Through repeated theoretical assumptions and experimentation computation and by adding heuristic search and data weight to the algorithm, I proposed a new algorithm called ODWU-Tree, which generated better test results. We wrote a thesis paper based on this project and it had been published successfully.

Rich project experience won me the opportunity to do summer research in Professor Qiu's Syntax-Guided Synthesis project team in Purdue University. I was primarily responsible for software development and participated in the improvement of the new method, using java language and Z3 SMT solver. We unavoidably encountered many problems during the development process, like the incompatible use of Z3 and low efficiency in the implementation of the new method. To solve the incompatibility problem, I rewrote most of Z3’s functions and its core algorithms. Besides, I proposed the idea to add multithreading to the method and optimized the algorithm included. After applying the idea, the accuracy of the method was improved by 20% and the whole processing time was reduced by 70%.