

Final Project Reflection

Using Genetic Algorithms to Win at Nim

Jude Battista working with Kristen Cunningham | December 14, 2019

Kristen and I chose a paired programming approach to this problem. I am a big proponent of the technique, as I find that despite the apparent inefficiency of having two programmers working on a single piece of code, the output is both faster and cleaner. Just having another pair of eyes on the code as you work is enormously beneficial for me as it helps avoid not only errors but time-intensive rabbit hole exploration. We adhered to this and worked together throughout the project. I wound up doing a little bit of cleanup solo on Friday as Kristen had to catch a flight and being local gave me the luxury of some extra time.

I consider myself fortunate to have worked with Kristen. We encountered all the usual development hiccoughs, but she neither faltered nor flagged. Because we both have full schedules between intensive class loads and work, we wound up putting in late nights and early mornings. I know few other students I would trust to put in the extra work necessary to bring this project to fruition. I thoroughly enjoyed being able to explore an entirely new (to me) programming technique, and would love to work with genetic algorithms in the future.

The major aspect I would change about the project is finding a way to devote more time to it. I believe we put in as much as we could given our schedules, but I plan to take another shot at the multi-stack version over December break. On the one hand, having two students with full schedules meant that both of us were perpetually pressed for time, but on the other it prevented any disparity in the amount of work we were able to which we were able to commit. I'm not sure that Nim is an ideal genetic algorithm problem, especially given the binary fitness function, but hopefully with some more time I will be able to get a better solution, if perhaps not an optimal one. I would also like to find a better agent representation than a string of individual moves. If we could introduce a concept of state, it could lead to substantially better performance.