Modifications of Artificial Players

The original plan for the artificial players that a user may play against, or pit up against each other to help train players or learn strategies from, has been modified during the evolution of the application. The three levels of difficulty originally established were to be labeled as Easy, Medium, and Hard to help users know exactly what they were picking without the requirement of outside assistance. They were to have clearly distinct levels of difficulty to beat, and work in a time effective manner.

Easy

The easy difficulty was planned to use a greedy algorithm to strictly take the largest possible move towards the goal. After implementing this it was found that not a single new user was able to beat the artificial player and during a meeting it was requested to be made easier. Since then the greedy algorithm has remained the same, but a restriction on the player has been put into place. Each turn the AI will generate a number between two and six and will make that the largest number of moves available that turn. For example if it generated three, then it may slide/hop, and then hop up to two additional times that turn during its final chosen move.

Medium

The medium difficulty was to add a min/maxing algorithm to make moves that don’t help the opponents more preferred. Also to add a preference to stay in the middle of the board, back piece weight, and split. After making the easy AI easier, along with our modification of the rules to make the game faster it was found that utilizing the greedy AI without the restrictions and adding a preference to staying centered on the path towards the goal was the most effective ‘medium’ difficulty. Many different difficulties were created and pitted against each other, and this has seemed to fit our purposes the best; being able to beat the easy AI consistently, while not being impossible for users to beat.

Hard

The plan surrounding the hard difficulty was originally to take the Medium AI and extend it to thinking a move in advance. This has been completed successfully and, while it still takes a moment to process even with pruning implemented, has been beating the medium difficulty computer players consistently. Creating these computer players has been quite exciting, and I look forward to experimenting with and perfecting them over the next few months.