

a)

Programming language used: iOS Swift (beta)

In order to run the program, you need an Apple computer (or a virtual machine with OSX) and Xcode.

b)

The cut-off occurs when the AI takes 10 seconds or longer to generate a game tree. When the cut-off happens, then the evaluation function is applied. For the evaluation function I used the difference of white and black stones, weighted by the number of the opposite players stones left on the board. Since this value could easily be over 1 or under -1, I used 999 and -999 for goal states, since they should be weighted much higher than "cut-off states".

For level 1 the AI is calculating the next step randomly.

For level 2 the cut-off function with 10 seconds is applied.

For level 3 no cut-off function is applied and the AI tries to generate a whole game tree every time... (this takes very long and not every time there's a finite solution, I guess)

c)

The program counts how many moves have been done by the two players. If there has been more than 40 moves and the game is still not finished, then it is a draw.

d)

If you want to stop a successive capture and let the other player continue with their round, just click on your stone again.

Also you can only see the last step of the AI's successive capture unfortunately. You can however see in the console which steps the AI has done (Though you might want to comment some other prints like the printing of the value of each node, so you don't get too spammed. If you want to do so, just comment lines `println` lines in the alpha beta search algorithm in the AI. Then you will only see the important information that you need.)

I tried many things to somehow show each move of the AI in the UI but the animations in Swift don't really wait until they are finished and the rest of the code keeps running. I tried using another thread to wait for the main thread but my other thread then seems to block the newly created thread, and I am still too new to the language and haven't figured everything out, so I just left it how it is now. I just wanted to try Apple's new language and thought that the game was not too complex and that I should give it try.