**CCA Assessment Write-Up:**

Time taken (s)

**Conclusion:**

Both AIs make exactly the same moves at the same ply (when no randomness is added), however, the one with alpha-beta pruning implemented makes turns much faster, especially on larger plies as more moves can be pruned (although the time taken for each move on both AIs does increase exponentially.) This is because the alpha-beta AI avoids calculating the scores moves that it knows will not be chosen if both players play optimally. Therefore, it ends up having equal win-rates to that of the standard minimax AI when playing against it, almost always winning when going first, and almost always losing when going second.

In a tournament, the obvious choice would be the alpha-beta AI due to its higher turn-making speed with no negative effect on performance. The optimal ply would probably be 3 or 4 as any higher gets so exponentially towards lengths of time that would probably not be allowed (the first turn with the alpha-beta AI at 5 ply takes 13 seconds.)