Brett Crawford

Robert Burns

Intro to AI: Final Project

Connect Four with AI

Our original goal for this project was to create a Connect Four game in Java. In this game we have variable board sizes, a fully functional UI, and most importantly a range of AI's to play against. We have made great progress at this point to achieve these goals. We currently have a semi well composed UI with working buttons and menu screens. We have a working AI that uses MIN and MAX to determine its moves. Before a recent bug caused by our repository the program was functional enough for one person to play against an AI whose difficulty can be varied. We are still working on this, at the moment you need to change the code to change the difficulty; it is not built in to the UI. Also we need to determine what setting is actually the most difficult. We can easily change how many turns the AI looks ahead, but when it starts looking ahead too far ahead the program is rather slow and it sometimes gets confused when it sees that there is a large number of ways for it to lose. This generally starts when looking about 5 turns ahead. It seems that the best number of turns to look ahead for is 3. We are hoping to have this worked out so we can have easily varied difficulties.

When we achieve this we plan to add the ability to have an AI go up against another AI to really see what the best way to tackle Connect Four is. We also plan to add alpha-beta pruning to one of the bots to see how effective this method is. We believe that this will take away from the confusion that the AI suffers from when it looks too far ahead. This could make way for a truly difficult Connect Four AI that is able to look many moves into the future while still retaining speed, accuracy and precision.

When all is said and done we plan to demonstrate our project with a bout between our two hardest AI's, followed by and compared to one of us playing against an AI. The rest of the project is nice, but the AI is what needs to be focused on for this project.