Final Project – Pentago – Answers to Task 1

Raquel Kampf – rekampf – 329873996

Noam Geller – geller - 313477754

Pentago is played on a 6 by 6 board, divided into four 3 by 3 quadrants. There are two players, black and white, who alternate turns. The goal of each player is to get five stones of their color in a row, either horizontally, vertically, or diagonally. Each turn, a player places a stone in an empty space in some quadrant, then chooses a possibly different quadrant to rotate 90 degrees left or right. If both players get five in a row at the same time, or the last move is played with no five in a row, the game is a tie. If a player makes five a row by placing a stone, there is no need to rotate a quadrant: the player wins immediately. (perfect-pentago.net)

The problem we are going to solve is being able to win the game, against a computer and human player alike.

We are going to solve it by using game tree algorithms learned in class such as Minimax and Alpha-Beta Pruning using different evaluation functions regarding the state of the board. The game is considered solved when using a database consisting of all possible board states (3e15), but we will try get good results using the aforementioned algorithms.

We think that our approach is the right one because we are researching the work on solving Pentago and similar games, but less sophisticated (4 in a row, etc.) which will give us guidance in the process. There is a lot out there, but we have what to add.

We are going to test our results by playing against other AIs, with different evaluations, and accordingly strengthen it.