Quarto! Minimax player
IT3105

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Abstract

This paper is an introduction to our Quarto! minimax player. In this we will try to explain how we created our implementation, what sort of decisions the player makes the reasoning behind it and our result both against other configurations of our player and against other students minimax implementations.

Contents

1 Introduction

The game of Quarto![1] is a quite simple game regarding its rules, but the hard part comes into play when us humans try to remember all the different attributes of the game. This is where a game playing algorithm comes into play. With an algorithm memory no longer becomes an issue as the algorithm can enumerate, if possible, and search through the whole instance space. In this assignment we were tasked with creating a minimax[2] player with Alpha-beta pruning[3]. The algorithm it self is not the most difficult one to implement, thats not to say that we didn't need to debug our code, but the challenge is coming up with a good set of heuristics to evaluate an intermediate state. We will start by explaining our chosen heuristics, we will then move on to talk about the tournament that we entered and lastly we will introduce our results and some thoughts about that.

2 Heuristics

3 Tournament

4 Results

4.1 Local

4.2 Tournament

[1] Explanation of rules in video form: `https://www.youtube.com/watch?feature=player_embedded&v=P6dy2eaYmos#!`

[2] Explanation of minimax from Wikipedia: `https://en.wikipedia.org/wiki/Minimax`

[3] Further explanation on Wikipedia: `https://en.wikipedia.org/wiki/Alpha-beta_pruning`

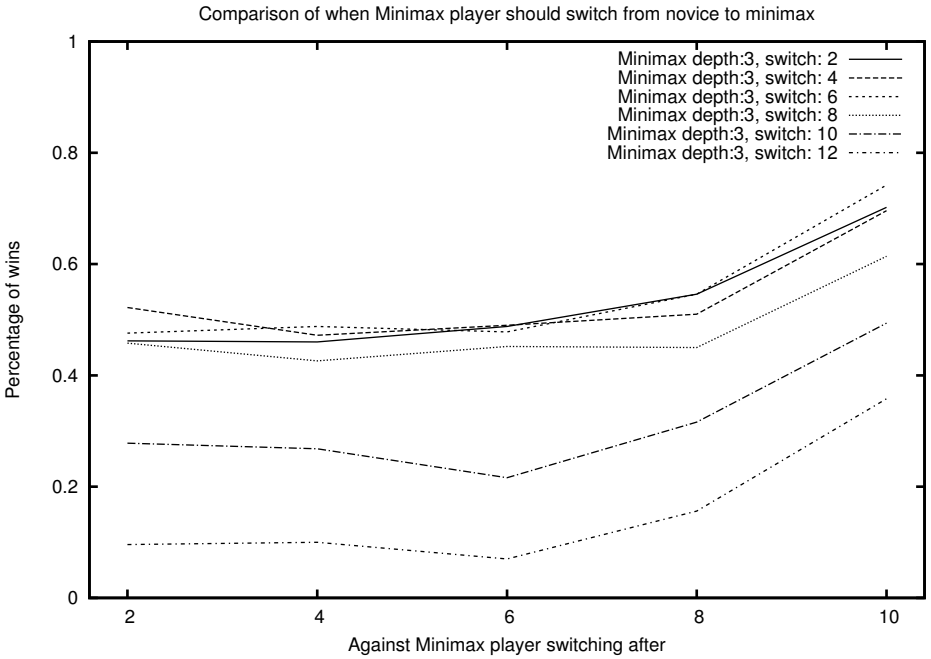

Figure 1: Graph describing our minimax switch results