TCSS 435 - Artificial Intelligence
Assignment 2 - 2048

Guidelines

This assignment consists of programming work. Solutions should be a complete working JavaScript program including your original work or **cited contributions** from other sources. These files should be compressed in a .zip file for submission through the Canvas link.

This assignment is to be completed on your own or in a group of two or three. If you choose to work in a group this must be clear in your submission. Please see the course syllabus or the course instructor for clarification on what is acceptable and unacceptable academic behavior regarding collaboration outside of a group of two or three.

Assignment

The popular web game 2048 (designed by Gabriele Cirulli) is a game in which a single player plays against the randomness of the game. Your task is to create an AI that can play the game well enough to reliably win. If your AI is winning then try to optimize it to get as high a score as possible.

You are provided with a large code base including Gabriele Cirulli's original game simulator with additions made by Chris Marriott to allow for artificial agent control. A sample agent is included that has a very simple strategy. It selects the first move in the list [UP, LEFT, RIGHT, DOWN] that is a legal move (results in a new state). The agent uses a clone of the gameboard to simulate the results of future moves. You must replace its selectMove method with your own strategy. I recommend using Expectimax or Monte Carlo simulation. In both cases you will have to also rely on an evaluation function of the current game state.

Your agent will be evaluated by allowing it to play 2048. It must select its move within one sixtieth of a second (that is, it must make 60 moves a second or more). Since the game is random we will test the agent a number of times to collect a set of scores. All agents capable of winning the game will be submitted to a friendly in-class competition for highest score.

Submission

The following files are provided for you:

- 2048 code base - html, css, and js files for the 2048 game
- agent.js - inlcudes a simple agent and an agent brain
- agentManager.js - interfaces the agent with the 2048 game

You will submit only:

- agent.js - your agent code