



For my research project this semester, I would like to develop an artificial intelligence that can play the game Minesweeper. Minesweeper is a game where a number of mines are randomly hidden on a field of squares. The player reveals squares, hoping not to reveal a mine. Every square that does not contain a mine instead contains information about the number of mines surrounding it. The game ends when the player reveals a mine (and loses) or reveals every non- mine square (and wins).

There has already been some work on this project, so my primary concern is not as much to find something groundbreaking as it is as an exercise in artificial intelligence and problem solving. Initial research has shown that no one has found a solution to this game, but no one has found that the game is impossible to solve. I hope I can discover something that may be useful in either goal.

Most artificial intelligences that I have found that play Minesweeper are simplistic; they will only flag mines that clear to be mines by the squares already revealed. This means other artificial intelligences can only play a game that is already started, and is not guaranteed to finish said game. In my design, I will incorporate not only finding mines that are certain to be in a position, but also to make intelligent guesses to the locations of mines it is not certain of, to make proper opening moves, and to keep cursor location as a relevant factor in its decision making (when a human plays Minesweeper, he uses a mouse. How far you have to move

your mouse to make a move affects your time, so good players try to play in an organized fashion to improve their score).

I believe I am qualified to perform this kind of research. I have detailed experience in the game Minesweeper itself; I have been a regular player since 2001. Also, I have written my own Minesweeper client (displayed above). This gives me not only an interface to use my artificial intelligence with, but also an intimate understanding of the game software itself. This will be an aid in writing the interface between the intelligence and the game.

Thank you for considering this proposal. I hope the coming research will be informative and entertaining to everyone involved.