For my final project I made the game Risk. I used perceptrons to determine when the AI should attack and where the AI should place its new soldiers. The game is made completely in objective c and is playable on an iPad in landscape orientation. The game begins with each party positioning 50 soldiers across the world on their respective countries. The human than goes first and can attack the AI (I recommend doing so!!!), and when the human is done attacking he has the option of moving soldiers from one country to another before ending his turn.

The AI’s turn then begins with positioning its new soldiers, which it does through the use of a perceptron. It will position its troops near a human country with the most soldiers until the perceptron determines it will win, then it will position the rest of the troops elsewhere. This allows for the computer to take out the human’s best country during its attack phase. The AI then goes into attack phase and will attack every country that the perceptron determines it will win against. This is why you don’t want to waste any of your turns, because the computer won’t hold back if you decide to stockpile all your troops on one country.

My objective with the project was to make an AI for Risk that was very difficult to win against, and I feel that I accomplished my goal. This AI is very hard to play against correctly, though there is a decent strategy of attacking as much as you can on turn one to beat the AI. The perceptrons really help to make the AI use intelligent moves and change its strategy if it thinks it can win. I also didn’t use any sources for my project besides my knowledge I gained from classes such as “Mobile App Design and Development” and class notes.

The majority of my time was spent actually coding the game to work and working on the AI. Figuring out how to utilize the perceptron and setting it up correctly took a lot of my time. I initially programmed a “dumb” AI, which just randomly attacked and added soldiers. I actually ended up editing most of my game methods to accommodate the new AI with the perceptron. I also have the AI reacting to the human controlling whole continents in which it will attempt to attack a country within the continent to prevent the human from getting more soldiers.

There is no sample input and output since every game will be different so it would be difficult to model a sample game. It is easiest just to play the game and see if you can beat the AI. The controls are simple: there are two table views and two buttons. The left table is generally what you are moving (i.e. the attacking country, troops to position, troops that are moving to a new country). The right table is generally where you are moving to (i.e. the defending country, where troops are being moved to). The white button in the middle of the game is the action button, which positions troops and is used to signal an attack. The done button in the right corner is used to transition phases and end your turn.

I also planned on adding dice to the game to show the rolls during an attack but didn’t have time to put this in. You can explicitly see your rolls in the console of xcode when running the code, just not within the app currently. It does show which countries the computer or the human has taken when an attack is successful. The code also doesn’t have the ability to recognize a winner at this time and will kill the program when a player wins.