Senior Project Proposal

Edward Tuckman

The goal of this project is to create a balanced board game that is fun and challenging to play. To accomplish this, the project has three stages.

First:

The first part of the project is actually creating the game. This includes the look and layout of the board, coming up with a ruleset, and a win condition. A lot of the work of this part initially will not be CS work, but will rather be thinking about the status of the game and finding out what kind of games people like to play. After a tentative rule set is in place the rest of this stage will be to develop a prototype for the game. The prototype will implement the ruleset and allow two players to play, at least as a console game. This prototype will also allow for testing and iterative development of the ruleset during the rest of the process. Other people can play while the rest of the project is under development, which will lead to a better set of rules, and possibly variations that can be implemented in the final game.

Deliverable: A command line/ basic version of the game with minimal UI.

Second:

The second part of the project is the real implementation of the game. This will be either in a mobile app or app for PC. The goal for this stage is to have a game that is fully playable with human players. It will have a useable UI, and should be distributable and playable
with minimal effort. The work in the transition from the prototype to the application is going to be mostly in learning a new development environment for a specific system. Once this is done/workable it can be used to test variations of the UI and the ruleset in a way that is easier for testers. Since it can be distributable, it will also not require my oversight for setup or play. A secondary goal for this part is implementing rule variations in the app that did not exist in the prototype. Players would be allowed to select the ruleset they want to play for each game. This depends on finding rulesets that are fun, and so may not be in the final deliverable.

**Deliverable:** An application with a full game with only human players.

Third:

The final part of the project is creating a competent AI player. The initial goal will be to create an AI player that can build and execute a strategy, to the point that it can beat a human player using a Monte Carlo strategy. The secondary goal will be to develop multiple difficulties for the AI player, allowing humans to train against easier opponents before attacking the more challenging levels. The AI would be incorporated into the application, with whatever rulesets are included from part two. The AI should be able to do well on any of the rulesets, with the fallback being not allowing the AI to play for any particularly complex versions of the game. Another possibility for this stage is using AI to evaluate the different game variations. It could be used to decide which rulesets provide the most variation in plays and which ones are too easy or difficult.

**Deliverable:** An application with the full game and a competent AI player.