Introduction

This project is a digital version of Ricochet Robot, which is a puzzle board game usually played among four or more players whereby at least one of the players needs to be a human. Players will move colored 'robots' around the board, competing for the least number of moves in a turn, the player with the most tokens (points) at the end wins the game.

Problem Statement

As of now, this game is mostly played with physical boards, and the virtual implementation of this game is very poor both in its design and player interaction. We are trying to create a much more intuitive digital version of this board game, which is convenient to play on two different difficulty settings. It will allow players to save games and resume back to it at a later time.

In addition to this ,we propose a grayscale mode which would cater for an audience with color deficiency. This would not only maximize the audience, but also provide an alternative to the monotonous coloured theme. Furthermore, there is a proposed network abstraction of the application to a website platform which is irrefutably going to increase its accessibility and therefore popularity.

Stakeholders & Key Interests

Stakeholders	Key Interests
Players	A player participates in the game, takes turns, bids and intends to win. The player expects the game to operate smoothly so that it is easy to navigate through.

IT staff	People responsible for maintaining the game, making updates and fixing errors.
Distributors	People responsible for selling the game after release. ie. Steam (A digital distribution platform)
Competitive Organization	People who will take the game into a professional and competitive platform ie mind sports

Summary of System Features

The system shall allow players to select from two levels of difficulty by offering two different board layouts. The players can then choose how many human player vs computer players will be in the game, up to 4. There will be an option for those with color vision deficiency to turn on, allowing the game to be played by anyone. It shall allow players to choose who takes the first turn ie. computer or player. The system will pause the players game on exit and allow them to resume. A running count of how many games the player has won will be stored in memory, as well as how many games they have lost.

Game play itself will randomly choose a token and show it to the players, the players will then be able to bet, once a player has announced their bet a timer will start and the remaining players will be allowed to place their bet on their turn before the timer runs out. Once the timer runs out the winner will be announced. The game will allow the winner of the betting round to take their turn and if the player fails it will return the play piece to it's starting position. If the player wins, the game will award the correct player the token (point). The game will track the points and announce the winner at the end of the game.

Project Risks

The following things are potential project risks:

- Getting the game running with up to 3 computer-players will be challenging and left until the end of the project to implement.

- Designing the board with different shaped obstacles can be difficult, especially thinking of the complex board which includes diagonal reflector walls.

- Implementing a sound algorithm which satisfies the game logic and follows all the rules might prove difficult given the time frame.

- Designing the code so that it can be adapted to network play in the future will be challenging due to the level of experience within the group. Some members have had 0 experience with this and so a lot of learning will need to happen to be able to implement this.

- Implementing the save and exit feature is new to some of the group members and so will take some extra learning to implement.

- Allowing players to place their bet within the timer time-frame will be challenging as in the board game fashion, anyone can call out their bet at any time. When playing the digital version it will be difficult to implement an anyone can bet system where it will only be running on one device and therefore will need to identify who is betting.