Midterm Review

Summary

Unfinished Specifications

[WS.6.1] Accessibility options (I.e.: Font size and Colour). [FR.17]

[WS.8] The client should store the game state. [FR.22]

[GS.7.b] Spies can end their turn early. [FR.7]

[GS.11] When the game is played locally, the game state can be saved. [FR.22]

[GS.12] The game should have a hint button for both spy and spymaster. [FR.24]

New Requirements

1. The spies cannot receive spymasters' messages.
2. Two players cannot host the same room.

Additional Notes

1. WS.13 is finished, but we still need to add a test to check it.
2. GS.12 should only be used in single player mode.
3. AIS.3 only depends on prediction accuracy.

Requirements Checklist

High Priority

Involving Game Rules:

All players (including the AI) should be able to play as either spy or spymaster.

1. The spymaster gives one word and a number (the number of related cards).
2. The spymaster can see the colours of all cards.
3. The colours of the cards are blank to the spies.
4. The spy can guess words.
5. If one team guesses the word incorrectly, their turn is over.
6. If one team guesses the correct number of words + 1, their turn is over.
7. If one team chooses to end their turn manually, their turn is over.
8. The players can be timed.
9. A team scores a point when a card is guessed correctly.
10. When a team picks all their coloured cards, that team wins.
11. When a team picks the bomb card, the other team wins.

More Generally:

12. The game should be playable locally.
13. The game should be playable online.
14. The player should be able to invite their friends with a link or a code.

15. The human player(s) should be able to select how many other AI players they would like.
16. There should be a chat box.
17. The player should be able to customize options.
18. The player should be introduced with a main menu.
19. The game should support 4 players (including AI and human players).

Low Priority

20. The AI should have difficulty levels.
21. The game should be playable on mobile devices.
22. The game state can be saved (when played locally).
23. The player should be able to observe an AI-only match.
24. The player should be able to get hints or advice.

Specifications Checklist

Web Development

1. [FR.19] The game should display a main menu when the game is opened.
2. [FR.13, FR.14] The main menu should either allow the player to select “Host Game” or “Join Game”.
3. [FR.14, FR.15] The host’s menu should provide an invite code.
4. [FR.14, FR.15] The invited player’s menu should accept an invite code.
5. [FR.18] The host should be able to select the following game options:
    5.1. ~~[FR.16, *FR,24*] How many players/AI players there will be.~~
    5.2. [FR.12] Whether there will be a bomb card.
    5.3. [NFR.21] The AI difficulty level (if applicable).
    5.4. [FR.9] Timer length.
6. [FR.18] Everybody (Including the host) should be able to select the following game options:
    6.1. [*NFR.5*] Accessibility options (I.e.: Font size and Colour).
    6.2. [*NFR.*6] Audio settings
7. [FR.17] Multiple spy players should be able to send & receive messages in a chat-box.
8. The client should store the game state.
9. [FR.2, FR.5] The client should be able send the game state to the server.
10. [FR.6, FR.7, FR.8, FR.10] The server should be able to calculate the new game state.
11. [FR.11, FR.12] The server should be able to send the new game state to the clients.
12. The game state should be shared in the specified format.
13. [NFR.2] The client-server communication should be under `100ms`.
14. [NFR.1] The game should run on a web browser.
15. *[FR.22]* The game’s CSS should have mobile compatibility.

Game Mechanics

1. [FR.1] The player should be able to play as either spy or spymaster by clicking on the corresponding button.
2. [FR.20] The game should accept 4 players.
3. [FR.2] Spymaster should be able to give a clue through a text box.

4. [FR.2] Spymaster should be able to select the number of related cards with a dropdown menu.
5. [FR.2] The client computer will check that the spymaster's clue is valid:
    a. [NFR.3] The spymaster should be able to type only one word in the text box.
    b. [NFR.4] The spymaster should not be able to type a word the same as card.
6. [FR.3, FR.3, FR.5, *NFR.6*] Only Spymasters should be able to see the coloured cards, hence the webpages will be different for both the spy and spymaster.
7. [FR.5, FR.8] Spies should be able to guess a word by clicking on the card they want.
    a. [FR.7] Spies can only select the number of cards + 1 that the spymaster has specified.
    b. [FR.8] Spies can end their turn early.
8. [FR.6, FR.7, FR.8, FR.10] The client keeps a score:
    a. The game should calculate the number of points based on cards chosen.
    b. The game should add the number of points corresponding to the number of cards picked from each team.
    c. Blank cards should not change the score but should end your team's turn.
9. [FR.11, FR.12] The game should end when conditions are met:
    a. When all cards from a team have been picked, the game should end.
    b. When the bomb card has been picked, the game should end.
10. [FR.9] All player's turns should be timed.
11. [*FR.23, NFR.6*] When the game is played locally, the game state can be saved.
12. [*FR.25*] The game should have a hint button for both spy and spymaster.
13. A player should be able to choose which team they would like to be on.

AI Development

1. [FR.1] The AI should be able to play as either spy or spymaster.
    a. The AI spy should get the predictions by comparing word vectors between hints and board words.
    b. The AI spymaster should provide hints by computing "scores" between possible hints (from vocabulary) and board words
2. [FR.1, FR.16, *FR.24*] One or two AI/AIs can be in a team.
    a. If two AI are in a team, they should take different roles and collaborate.
    b. If one AI is with a single player, the AI should assist the human player.
    c. Four AIs should play in two teams without human players, with one spy and one spymaster in each team. (Known as: *observer mode*)
3. [FR.21] The AI could be configured to achieve different difficulty levels.
    a. The AI difficulty should depend on the size of vocabulary or prediction accuracy.
4. [NFR.2] The NLP model of AI should be optimized to get the predictions under `500ms`.