**CITS3001 Project**

**2022**

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# Introduction

Explain your understanding of the game in one paragraph.

**Please note that throughout the report, you are allowed to add screenshots, graphs, equations and code snippets.**

# Assumptions

State all your assumptions, including but not limited to:

1. What is the interval of uncertainty in your project? What do-1,0,+1 represent?
2. How are you perceiving green nodes’ opinion? Do you perceive it as vote/not vote in election, or are you perceiving it as vote for blue/vote for red?
3. Any other assumptions

# Selection and design of appropriate AI technology

## Methodology

1. Describe and justify your methodology for this project, including
   1. which parameters are hard coded,
   2. which parameters are to be input at the start of the game and
   3. what type of methods you used to make your agents intelligent.

## Game Play

1. Explain in detail how the game is played?
2. How turns are organised?
3. How opinions and uncertainties are updated?
4. Etc.

# Implementation of the Agents

1. State main points about the implementation of agents. This heading is more focused on the code and how you made it efficient.
2. How long the program takes to run a single turn with variable number of green agents. Report for both small and large number of green agents.
3. Which programming language you used? Whether you followed an Object Oriented approach or not.
4. Which libraries you have used?
5. Etc.

## Running the game

How can a layman run your game? Provide the commands, and associated parameters needed with an example workflow of the game.

# Agent Design

This heading focuses on the architectural design of the agents in the game

e.g.,

## Green Agents

1. Are you using a static network or a dynamic network?
2. Can we generate a network when the game start?
3. What type of underlying network model you are using?
4. Other properties of the network, e.g., is it weighed, can links be added or removed during the play?
5. Etc.

## Red and blue agents

1. Describe your design of the message potency (a.k.a. uncertainty of red and blue nodes. )
2. Describe your method for changing the followers' number in case of red agent
3. Describe your method for changing the energy level of blue nodes (a.k.a. lifeline)
4. Other Pertinent points regarding the working of your agent

## Grey Agents

Describe the working of the grey agents.

# Validation of Agents

1. Report any tests you conducted to ensure the agents are doing the task they have been asked to do.

**Perform Various Simulations for the following set of questions.**

1. How does the game change if you have a tight uncertainty interval at the beginning of the game?
2. How does the game change if you have a broad uncertainty interval at the beginning of the game?
3. Plot distribution of uncertainties for each of the above questions.
4. In order for the Red agent to win (i.e., a higher number of green agents with the opinion “not vote”, and an uncertainty less than 0 (which means they are pretty certain about their choice)), what is the best strategy?
   1. Discuss and show with simulation results how many rounds the red agent needs in order to win.
5. In order for the Blue agent to win (i.e., a higher number of green agents with an opinion “vote”, and an uncertainty less than 0 (which means they are pretty certain about their choice)), what is the best strategy? [
   1. Discuss and show with simulation results how many rounds the blue agent needs in order to win.
   2. What impact did grey agents have on the simulation? Explain how did you test the impact of grey agents?

**Please note that for answering questions use your own mental model of how you implemented uncertainties if they are different from the specs**

# Performance of Agent when playing with a human

Does the agent run and performs at an excellent level with challenging play when the opponent is a human? Discuss your findings

# Visualisation

Describe your visualisation methods with some screenshots