ID2209 – Distributed Artificial Intelligence and Intelligent Agents

Assignment 3

Course Coordinator
Mihhail Matskin

Course Assistants
Mehdi Satei
Óttar Guðmundsson
Shatha Jaradat

Group 5
Mukesh Kottiliyil Muralidharan
Rui Qu

2018/11/28

<Task1>

Run GAMA 1.8 and import ID2209_DAIIA_Lab3 as a new project. Open Assignment3_1.gaml and press main to run the simulation.

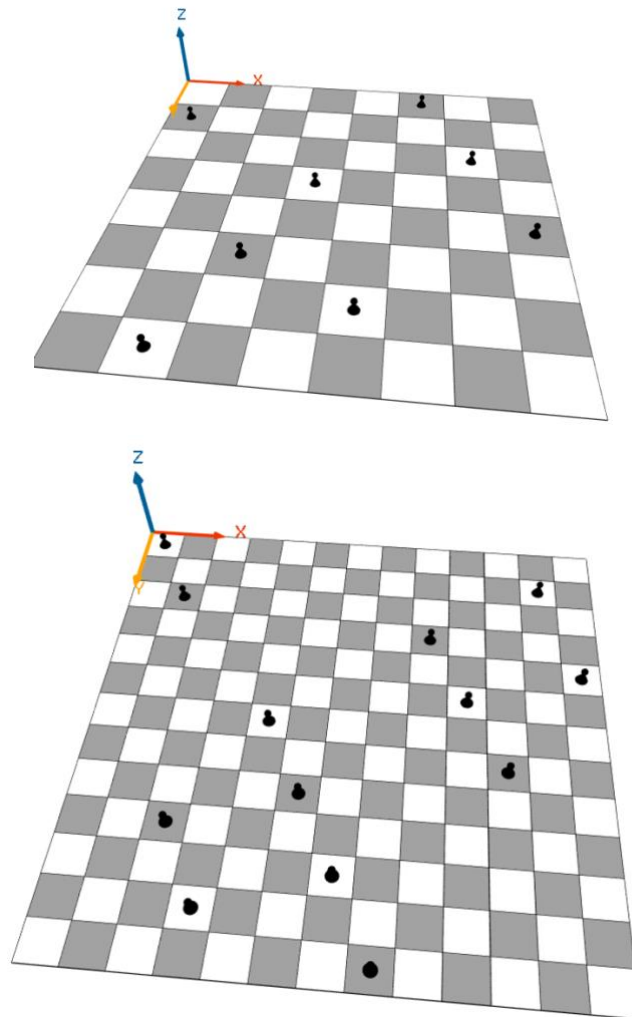*Figure 1: A screenshot of the possible solution.*

Agent Queen

<Black 3D model, the number of Queen agents ranges from 4 to 20>

Queen agents are randomly set on the chess board initially and move based on desired rules (i.e. No 2 Queens share the same row, colunm and diagnoal line).

For each Queen, it find a position on the grid and move to it, then call the next Queen to find and move till all the last Queens. If no position is found (Queen cannot be placed), back to the former Queen to find another possible position.

FIPA is used to communicate among Queens as shown below.

```
Queen0: Find a new position
Queen0: Position found
```

```
Queen11: Find a new position
Queen11: Position not found, back to Queen(10)
Queen10: Position not found, back to Queen(9)
Queen9: Position found
```
Finally, all Queen agents are placed in N*N Chess Board iteratively.

```
All positions found!
```
.

<Task2>

Run GAMA 1.8 and import ID2209_DAIIA_Lab3 as a new project. Open Assignment3_2.gaml and press main to run the simulation.
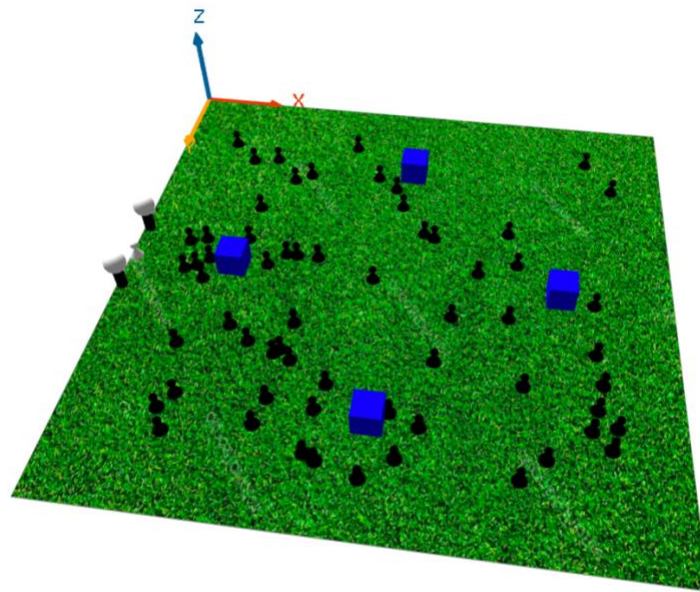

Figure 2: A screenshot of the final solution.

Agent Quest

<Black 3D model, random number of Quest agents >

Quests are set with 7 utilities (prefrence of act, theatrics, light, sound, popularity, opposite attract and crowd), values of which are randomly picked.

Agent Stage 0-3

<4 blue cube in the Festival map >

Stages are set with 7 utilities (act, theatrics, light, sound, popularity, opposite attract and crowd) corresponding to Agent Quest.

utility of each stage = prefrence of act*act + prefrence of theatrics*theatrics + prefrence of light*light + prefrence of sound*sound + prefrence of popularity*popularity + prefrence of opposite attract*opposite attract

FIPA is used to communicate between Quest and Agent. Quest agent will move to Stage with largest utility according to their prefrence. Specificly for the crowd, if too many guests in a stage and the guest prefer less crowd, new utilitiy is then calculated.

```
[3,3,3,0,2,0,2,0,0,0,0,0,1,0,0,0,1,0,0,0,3,0,0,0,0,3
Guest44 will move to Stage0 based on the utilitiy.
The faborable places of all guests in a list
[3,3,3,0,2,0,2,0,0,0,0,0,1,0,0,0,1,0,0,0,3,0,0,0,0,3
Guest45 will move to Stage0 based on the utilitiy.
The faborable places of all guests in a list
[3,3,3,0,2,0,2,0,0,0,0,0,1,0,0,0,1,0,0,0,3,0,0,0,0,3
Guest46 will move to Stage3 based on the utilitiy.
```

Agent Stage 0-3

<White 3D model near the Entrance>

If number of guests in a stage is more than a certain threshold, then the crowded is activated.

```
Not optimal, move to former goal!
[1,1,1,1,2,2,1,1,1,1,1,1,2,1,1,1,1,0,1,1,0,1,1,1,1,1,
The favorable places of all guests in a list
[1,1,1,1,2,2,1,1,1,1,1,1,2,1,1,1,1,0,1,1,0,1,1,1,1,1,
Guest0 will move to Stage1 based on the utilitiy.
The favorable places of all quests in a list
```

<If you implemented the creative part, please fill this table with the relevant information>

Qualitative/Quantitative questions	Answer
Time spent on finding and developing the creative part	*10hours in total*
In what area is your idea mostly related to…	*Reproduce real life scene*
On the scale of 1-5, how much did the extra feature add to the assignment?	*5*
On the scale of 1-5, how much did you learn from implementing your feature?	*4*

Discussion / Conclusion

Overall, all the logics runs well but still need improvements. For Task 1 large number of queen will take much more time to succeed. We'll search new algorithm for higher implementaion speed. For Task 2, we were trying to implement 4different stages holding 4 different events with fixed attributes, but we couldn't manage to finish it in limited time. We'll work on it and update code on Canvas. A good assignment, can't wait to create a new version when I get back home to show my friends and family!