ID2209 – Distributed Artificial Intelligence and Intelligent Agents

Assignment 3 – Coordination and Utility

Group 24

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Species (Task 1)

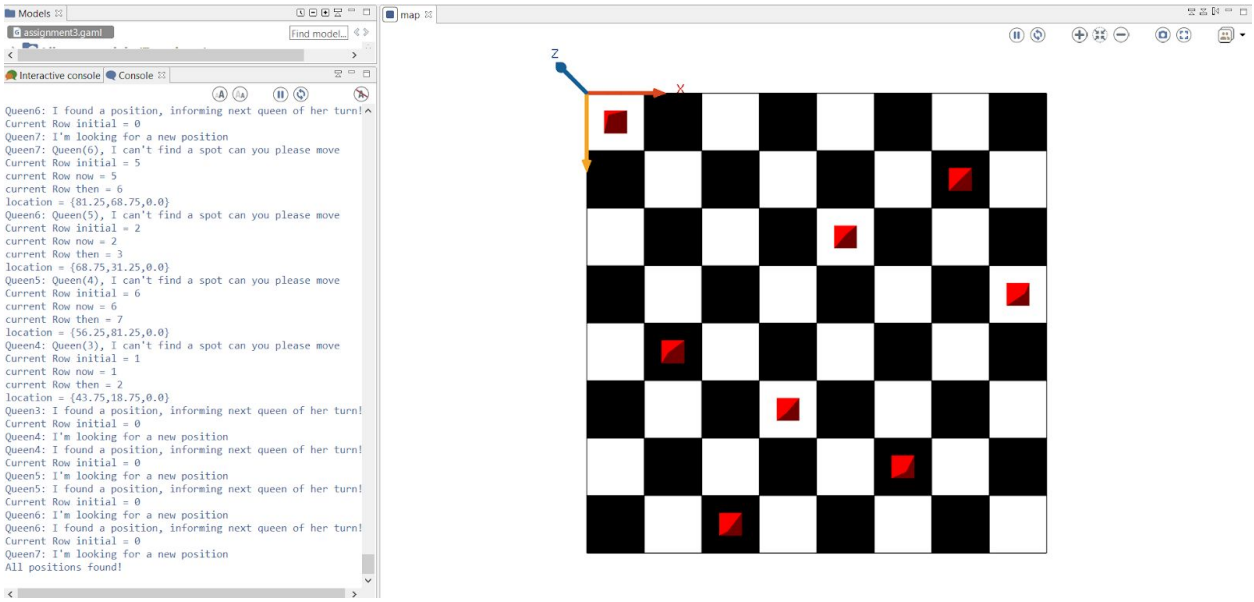
Queen Agent

The queen agent is responsible for finding a space in the column matching its index in the list of queens. It should also look after the condition of having a free spot which is not under attack by any other previous queen agent. If it cannot do so it will then inform the previous queen so that it moves and responds to such responses when they are given from the successor queen.

- Started while creating a list of Queens and ChessBoardCells.
- Created the Grids of Chess Board by keeping the height, width, neighbours the same number as the number of queens.
- The Queen Agent then informs and starts the conversation to find position.

Multiple **reflexes** are used to place the queen agents properly into chessboard cells.

- *tellPerviousQueenToMove* - When no other position("noPositionsAvailable") is available, it checks with the previous queen and informs it to reposition("RePosition") itself.
- *informfoundMyPosition* - When it finds a valid position("foundMyPosition"), it informs the next queen for its turn("FindYourPosition").
- *reactToMessages* - When the queen receives an information stating "FindYourPosition", it ticks the "tryToFindPosition" , and starts looking for a new position.
  - When the queen receives an information stating "RePosition", basically the new queen agent informs the previous queen that "I can't find a spot can you please move". So the previous queen moves to the next valid cell and cell is updated. If the next queen is still not able to find a valid cell in its neighbouring column, the previous queen is taken off the grid to a location outside the grid (-5,-5).Then the previous queen now starts a conversation with the queen previous to itself and asks to reposition as it is not able to find a position. This process continues until all the queens find a valid position with multiple checks and conditions.
- *tryToFindPosition* - While trying to find a position, we check if the row or the diagonal is under attack by any other queen agent or not.



Species (Task 2)

Agent Stage

The Stage holds events, like concerts, movies and talks etc. Each event has 4 attributes, each stage has multiple events through the day, and the attributes differ for each event. After the attributes are assigned for a new event, they are sent over to the participants for their information.

Reflexes

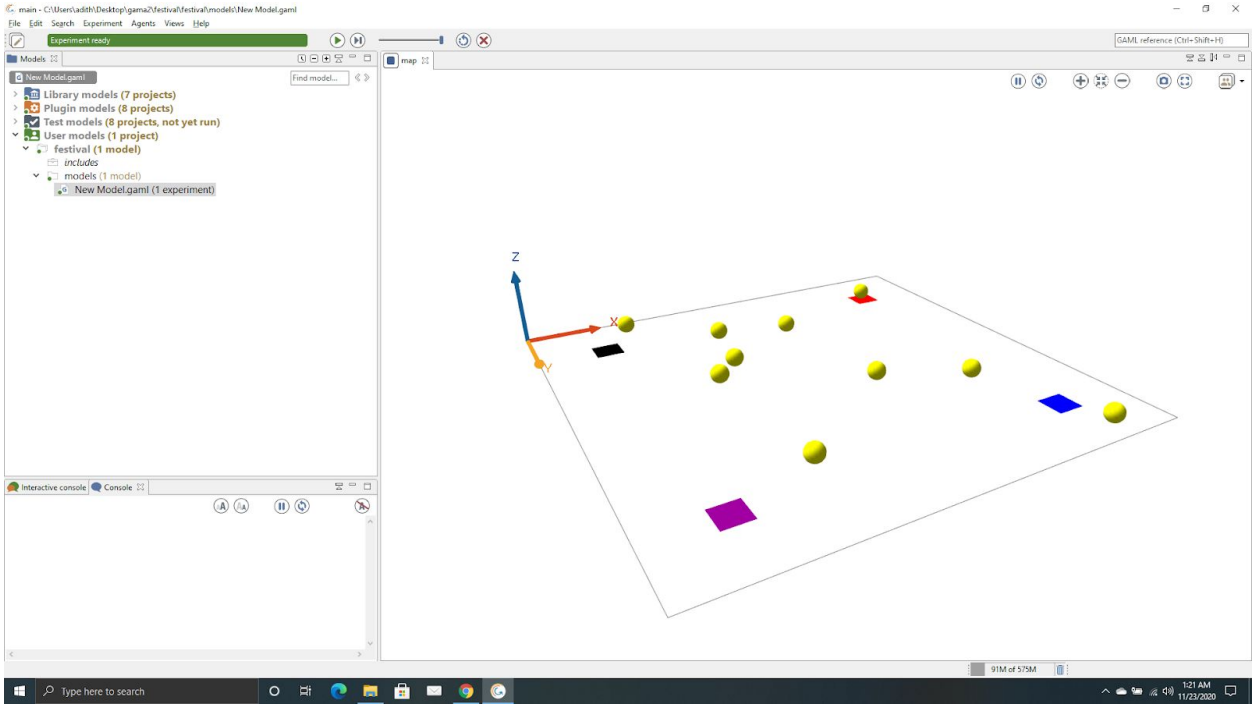
- Reassign : For every 10 time interval in simulation time the stage attributes are changed.
- Send values: when the user requests for the attributes, we sent it over.

Agent Guest

The Guest has multiple functions. The guest has attributes for various events at stages, based on the liking of each and every event in a stage. When the guest wants to move to a stage then the agent requests the value from the stage, and calculates the best stage by multiplying the stage attributes and the guest attributes and figuring out the max of them all. For the challenge we included an extra factor for crowd in the utility function.

Reflexes:

- *Getstageinformation* : when the guest wants to move to a new show it requests for the stage attributes for all the stages from the stage agents.
- *findTheMostAppropriateStage*: To multiply the stag attributes and guest attributes and include the crowd likeness factor and calculate the most apt stage the guest needs to travel to.
- *moveToTarget*: To travel from stage to stage


main - C:\Users\adith\Desktop\gama2\festival\festival\models\New Model.gaml
File Edit Search Experiment Agents Views Help
Experiment ready
GAML reference (Ctrl+Shift+H)
Models
New Model.gaml
Find model...
Library models (7 projects)
Plugin models (8 projects)
Test models (8 projects, not yet run)
User models (1 project)
festival (1 model)
includes
models (1 model)
New Model.gaml (1 experiment)
map
Z
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Interactive console
Console
91M of 575M
Type here to search
1:21 AM
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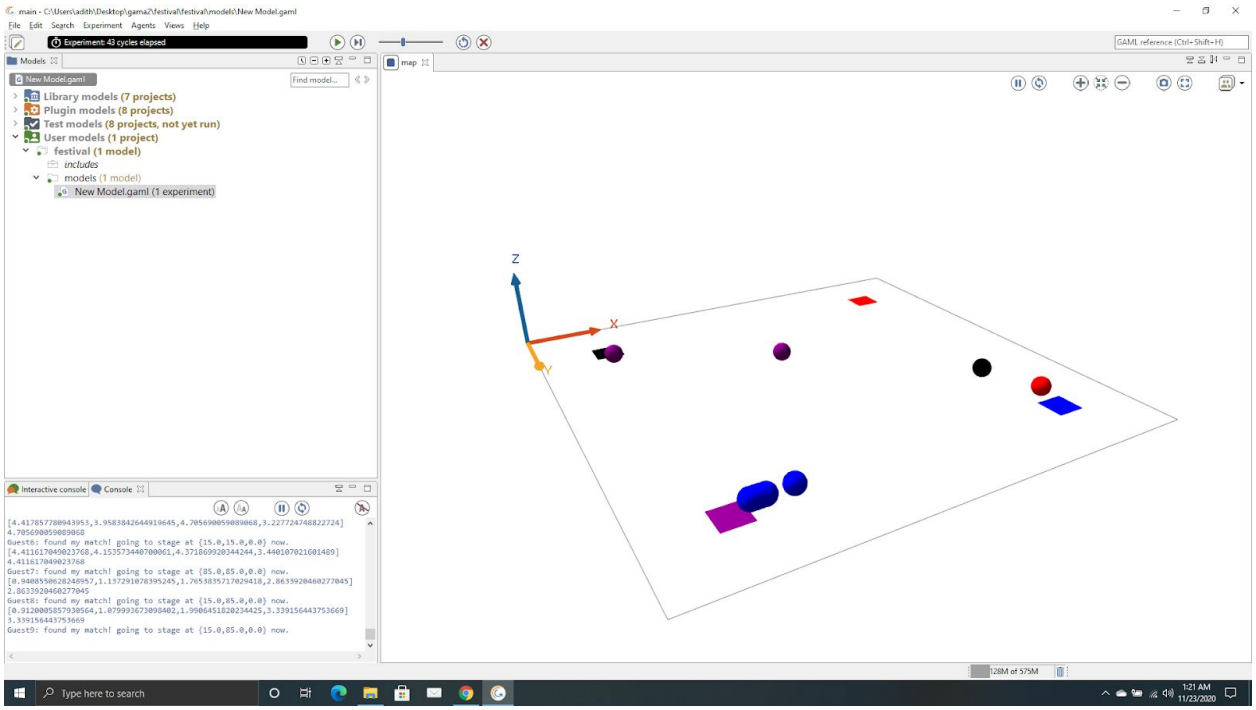
main - C:\Users\adith\Desktop\gama2\festival\festival\models\New Model.gaml
File Edit Search Experiment Agents Views Help
Experiment: 43 cycles elapsed
GAML reference (Ctrl+Shift+H)
Models
New Model.gaml
Find model...
Library models (7 projects)
Plugin models (8 projects)
Test models (8 projects, not yet run)
User models (1 project)
festival (1 model)
includes
models (1 model)
New Model.gaml (1 experiment)
map
Z
X
Y
Interactive console
Console
[4.417857780943953,3.9583842644919645,4.705690059089068,3.227724748822724]
4.705690059089068
Guest6: found my match! going to stage at {15.0,15.0,0.0} now.
[4.411617049023768,4.153573440700061,4.371869920344244,3.440107021601489]
4.411617049023768
Guest7: found my match! going to stage at {85.0,85.0,0.0} now.
[0.9488550628248957,1.1372910783952451,1.7653835717029418,2.863392046027704 5]
2.863392046027704 5
Guest8: found my match! going to stage at {15.0,85.0,0.0} now.
[0.9120005857930564,1.0799936730904021,1.9506451820234425,3.339156443753669]
3.339156443753669
Guest9: found my match! going to stage at {15.0,85.0,0.0} now.
128M of 575M
Type here to search
1:21 AM
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