ID2209 – Distributed Artificial Intelligence and Intelligent Agents

# Assignment 3

# Coordination and Utility


## Group 38

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27 November 2019

# Introduction

In this assignment, we were given two different tasks to increase our ability in FIPA ACL, agent coordination and gain an understanding in utility base decisions.

There were challenges to improve upon and increase the detail level of the simulation. Such as adding multiple auctions, different settings or self-imposed creativity challenges.

# How to Run

Extract the folder *Assignment-3* from the .zip file and import as a project to GAMA 1.8 version built for Linux. There are two model files *task1.gaml* and t*ask2.gaml* that contain a single experiment each which can be run to observe the simulation through the console or the 2D model.

# Task 1

## Species

### Board

Board agents hold the dimensions of the board and a grid that is used to keep the locations of the queens on the board.

### Queen

Queen agents are linked to the board and another queen agent that is their predecessor.

## Results

I was not able to finish this task before the deadline.

# Task 2

## Species

### Concert

Concert agents are unchanging and conceptual. They are used as a data structure to store and pass information as needed. Each has six variables that stands for the different attributes of the act and are associated with a single stage.

### Stage

Unlike concerts, stages have an active role in the model. They keep time and inform all of the guests as old concerts get finished and new concerts start. They are also where guests head to if they decide to see the concert.

### Guest

Guests have the most active role in the model. They have six variables that stand for their preferences for concert attributes. Each time they are informed of a new concert they compare it to all of the concerts they know of and head to the best one. This evaluation is done through an utility function.

## Results

At the beginning of the simulation guests distribute evenly to the concerts. However, after the first round of the concerts are over they start to act very uniformly. I think this stems from me being unable to achieve a wide range of preference distribution. But, even under this situation, guests separate from time to time. So it is obvious that it works.

# Challenges and Creative Implementation

I did not attempt any.

# Conclusion

Compared to the previous assignment, I feel that I have a better understanding of FIPA. In the other direction, the biggest difficulty I face is the lack of documentation and examples using the GAMA platform.