ID2209 Distributed Artificial Intelligence and Intelligent Agents

Assignment 1 - GAMA and agents

Assignment‘s theme

Festival

- **Assignment 1 – GAMA and agents**
  - **Introduction to GAMA**
  - **Festival map, guests seeking information**
- Assignment 2 – Negotiation and Communication (FIPA)
  - Dutch auctions on merch
  - Communicating through FIPA protocol
- Assignment 3 - Coordination
  - Positioning speakers at main stage (N Queen problem)
  - Visit all acts (Minimize travelling time + crowd at acts)

Create a basic festival with stores

- Create 3 types of agents for the festival simulation.
- These types should be Guests, Stores and an Information Center
- Make sure they look different (shape, color)
- Add them to a simulation and make them interact with each other according to description (see slide Deliverables)

X1,Y1

X2,Y2

1.
Guest:Hmm.. I‘m thirsty!
Where should the next juice bar be?

2.
Information: Hungry or Thirsty ?
Guest: Thirsty!
Information: Ok, go to {X2,Y2}

3.
Guest: That was nice!
Back to dancing

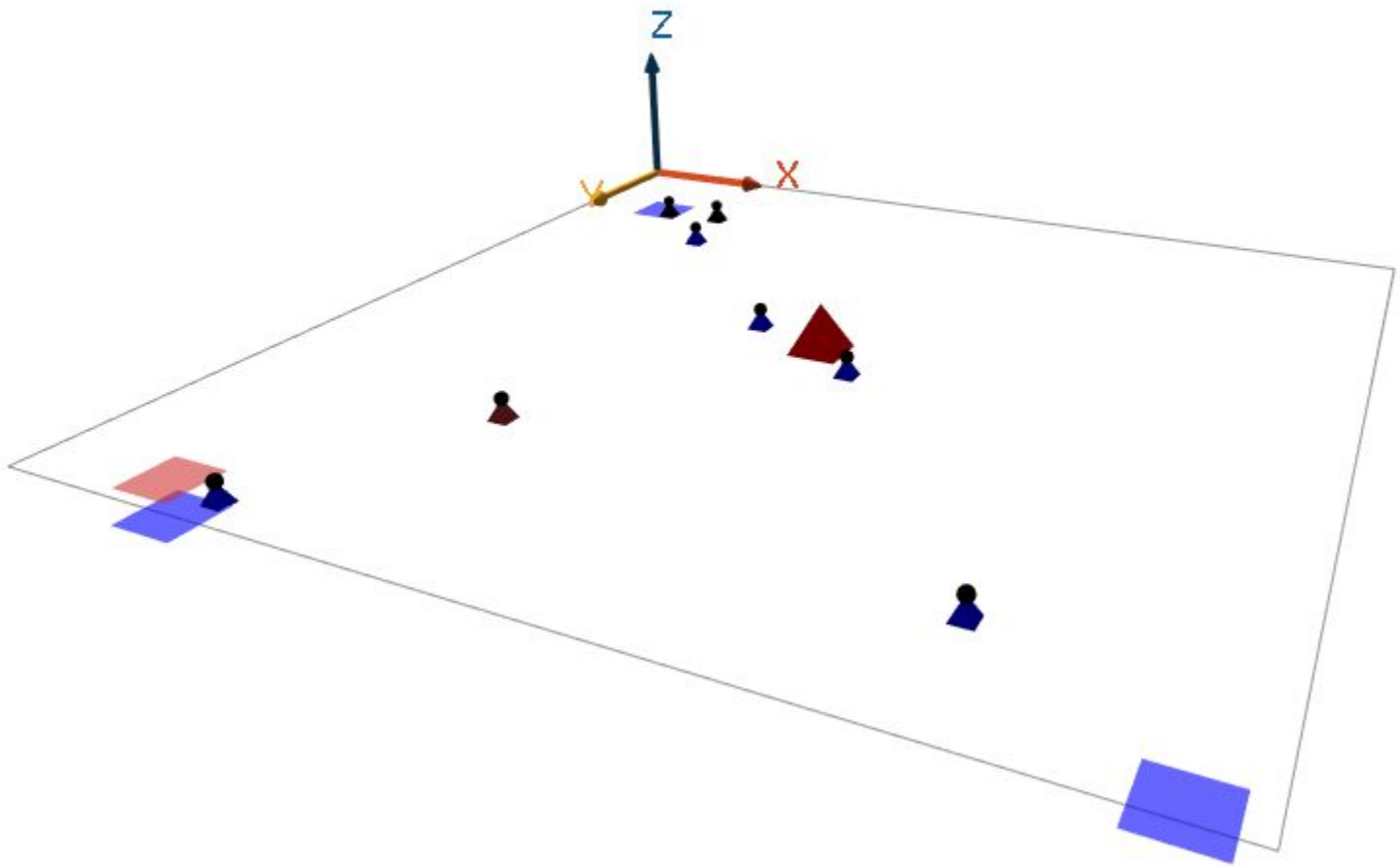
```
species FestivalGuest skills:[moving]
{
    point targetPoint <- nil;

    reflex beIdle when: targetPoint = nil
    {
        do wander;
    }

    reflex moveToTarget when: targetPoint != nil
    {
        do goto target:targetPoint;
    }

    reflex enterStore when: location distance_to(targetPoint) < 2
    {
        // Do something here
    }
}
```

Demonstration



Goal

- Introduction to the Gama platform
- Working with agents
- Learning the GAMA syntax
- Creating different types of agents
- Starting basic simulations
- Little bit of movement and behaviour

Deliverables

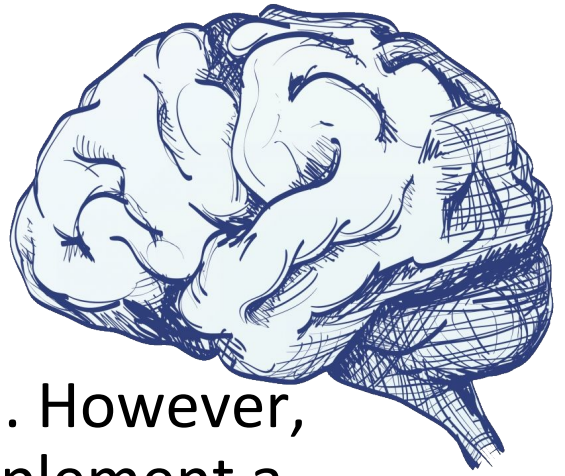
- A continuously running simulation with
  - 1 Information center (agent)
  - +10 Festival guests (agent) with at least two attributes (THIRST and HUNGER)
  - +4 Shops (agent) with at least two different traits (FOOD and WATER)
- At some point, each guest must replenish an attribute
  - Hint: An attribute could simply be a float/int that is decreased by some condition.
- Guests know the location of the information center by default
- Guests must communicate with information center for directions to shop
  - Hint: Use the *ask* function when the center is in range

- When guests arrive at shop location, they replenish the attribute.
  - Hint: Set the float/int value back to the original value
- When replenished, they go back being idle/doing something else until they get hungry or thirsty again.

  Include a short report (1-2 pages max) about your solution and describe your approach. Also include a description about your solution to the challenge


ARE YOU UP FOR THE
CHALLENGE?

Memory of agents (small brain)



- When an agent visits a shop, they will remember the position. However, sometimes they would like to discover new places as well. Implement a small memory in agents so they will remember places they have been to (make his actions randomized).
- Agents on their way to the information center can also *ask* agents in limited range for places instead of travelling all the way to the information center.
- Implement this logic and compare distance saved by sharing knowledge.
  - Hint: Track distance traveled of agents with and without the brain and report on if this reduces the total distance traveled.

Removing bad behaving agents

- There are always bad apples at festivals. Some are noisy, some steal and some are just looking for a fight.
- Create a scenario where an agent should be removed from the festival.
  - Hint: Agents are removed using the *die* function.
- Create a new agent, **Security Guard**, that is able to do so.
- The only way of this happening, is that another guest reports it. The guest should go to information center and ask where there Guard is located, go to him and escort him to the bad behaving actor.
- Once the Guard reaches the agent, he should remove him.

Questions?