MAS Project Proposal

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Criminals and Agents

I would like to implement my idea using Jason in order to exploit the communication between agents and because I can also use the GUI it provides which will be utilized to visualize a city environment where the agents reside.

Environment

This is the location where the agents will be inserted and where they will interact, my idea was to create a sort of “city” using a grid.

In the grid there are the following elements and agents:

- Some walls that can’t be crossed by any type of agent
- In a predefined position there is the police station from which the police agents start searching for criminals in the city
- In some predefined positions there are criminals
- In some predefined positions there are civilians
- In some predefined positions there are clues

Agents

There are four different types of agents with different behaviors:

1. **Criminal agents:**

   They are positioned in the city and their behavior is to run away from police

agents, when they are caught by the police they are taken to the police station.

2. **Civilians agents:**

   They are simple people who live in the city, positioned in it.

   Civilians can interact with police agents and they should demonstrate through their answers that they are not criminals.

   I think it could be a good idea to make them able to communicate to the police agents one coordinate (x or y) of a criminal or of a suspicious person in the city in order to demonstrate that they are innocent.

3. **Police agents:**

   They leave from the police station and they start to explore the city looking for criminals and clues.

   They can encounter both civilians and criminals, when they encounter one of them they start asking some questions, depending on the answer they should decide whether that agent is a criminal or a civilian.

   If the police agent comes to the conclusion that the agent is a criminal, he takes him to the police station.

   If the police agent comes to the conclusion that the agent is a civilian, he starts looking again for criminals.

   The police agents may also encounter clues that suggest one coordinate (x or y) of one criminal location. When a police agent encounters a clue it adds to its belief this information, saving the ID of the criminal and one of its two coordinates. When and if the police agent encounters the second clue relative to that criminal, having the two coordinates of the criminal he can start moving in that direction in order to capture the criminal.

   Additionally, if I will have time, I thought about implementing also the communication between two police agents: if they meet and for instance, the first one has an information like “Criminal 1, x=10” and the second one has an

information like “Criminal 1, y=20” one of the two can give to the other the missing coordinate of the “criminal 1” such that one of the two police agents can go to the criminal and take him to prison.

4. **Clue agents:**

   They are positioned in the city and when they are met by a police agent they communicate him only one coordinate (x or y) of a criminal and the ID of that criminal.

   In this way for each criminal there are two clues, one suggesting the x coordinate and one suggesting the y coordinate and when pair of clues relative to the same criminal ID are collected from the police agent, the precise position of the criminal is known.

→ In this updated version of the project proposal, I tried to incorporate all the features recommended and suggested in the feedback provided via email in response to my previous submission.

“BDI-based Cognitive Agent Communication and Coordination in a Simulated Environment with Jason”