Distributed Artificial Intelligence
Course 2021-2022
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Second Assignment: Negotiation Market in NetLogo

1. Introduction

In former practicals, we learned to simulate multi-agent systems, where agents act in an autonomous fashion, but cannot communicate with each other or interact with their environment. In this practical we will put these notions to practice, carrying out a simulation to **study market behaviour**. Which market? Which agents? How should agents interact with each other? All of these questions you must first answer to implement the market of your choosing.

2. Requirements

Although the topic is free, there are certain things your simulation must include:

- There must be some sort of **negotiation** between **buyers** and **sellers** via **message passing**.
- These negotiations must abide by given **protocols that you** yourselves must **define**: they can be bilateral (peer-to-peer) or collective, involve a single product or packs of products, etc.
- **Buyers and sellers must exhibit different preferences and requirements**, in such a way that different transactions benefit some users but not others.
- Each **transaction** must imply a market **down payment**. The payment will consist of a small fixed part plus the 1% of the purchase value. The payment will be covered by the buyer once the payment by the buyer has been received

3. Analysis

This practical is different for everyone, and you will have to prepare a **15 min presentation** for your companions. The presentation must include:

- **Motivation** and **description** of a **simulated system**. If you based yourselves in an existing model, please reference it and indicate which improvements you have made.
- Specify the **interaction protocols** between your agents. The procedure followed by each agent at each interaction must be clear.
- **Explain and argue the design decisions of the interface you designed**, including:
    - Which are the **free parameters** you may use for the experiments?
    - How do you **visualize** during **simulation** and during **execution**?
    - Which are the **output data** of your simulation? The ones you use to evaluate whatever happens in it (experimental results).
- Describe the **experiments** you carried out and the **results** obtained.

- **Analyses and conclusions of the experiments you carried out**. Does the global behaviour match your expectations? Why/ why not? What have you learned with these simulations
- **Future work**. Which ideas have you not implemented? Which are the potential things you could ameliorate to see how your simulation would work.

4. Delivery

Beware that the presentation must not include any details of the implementation (code). Therefore, in addition to the **presentation**, that day you must also deliver the **NetLogo project** and a **memory file** in pdf format, containing an explanation of your implementation. The memory must describe your code by parts, indicating how you must have carried out that each bit works according to specification. Please, emphasize your tests to assess the interaction protocols across agents as described in your presentation.

The delivery date is the **20th December at 18:59**.

5. Evaluation

We will evaluate four aspects of your work:

1. Originality and quality of the model developed.
2. Quality of the presentation.
3. Tests carried out / analyses / conclusions.
4. Quality of the memory file.