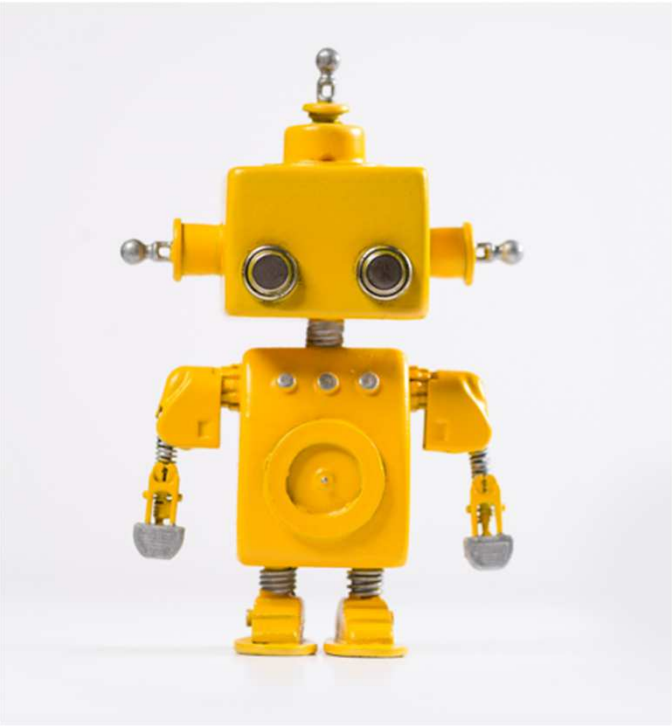
Project Guide 01

Fundamentals of Artificial Intelligence

MSc in Applied Artificial Intelligence, 2023-24

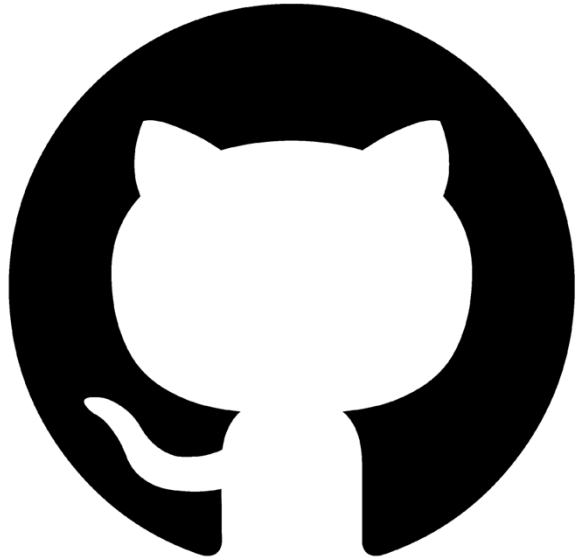
Introduction

- The goal of the project is to develop an intelligent agent, documenting the design and implementation steps
- Each team must consist of 2 students
- The project must be available in a Github repository
  - The code and documentation must be merged into a Jupyter Notebook
  - The repository must contain all the files required to run the solution
- A ZIP file of the repository must be submitted on Moodle before the deadline



GitHub Platform

- Each student must create an account on the GitHub platform
  - One of the members of the group must create a private repository
  - Use the nomenclature "FAI_###", where ### corresponds to the group
  - Add the other member of the group as collaborators
- The lecturer/teacher should also be added to the repository

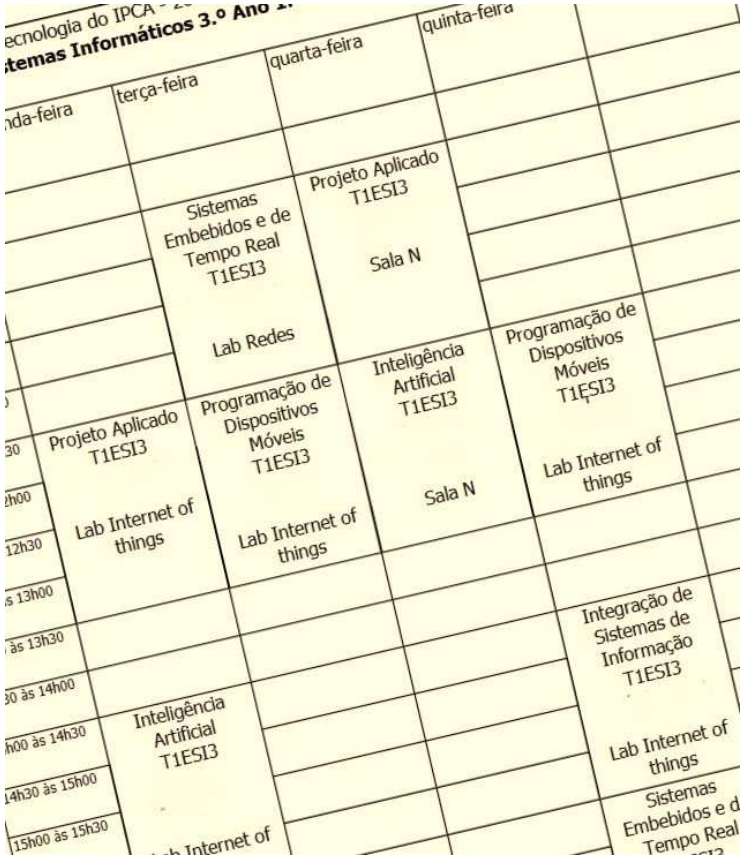


Theme: Class schedules

Class scheduling

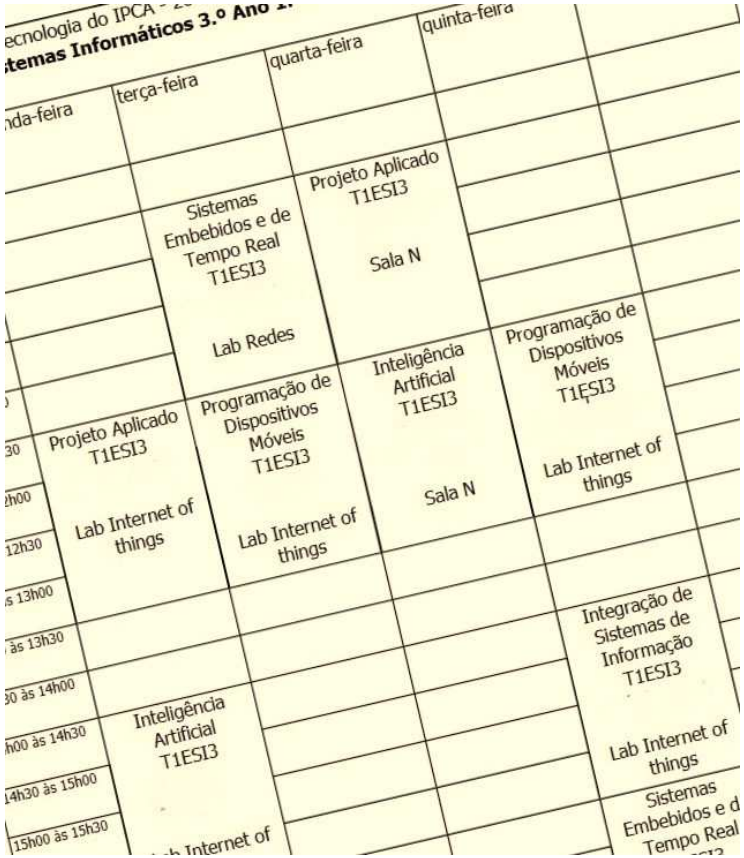
- The scheduling of lessons has to take into account the availability of teachers, the size of the classroom, and many other constraints, such as:
  - All lessons last 2 hours and take place on weekdays
  - All classes have 4 to 10 lessons per week
  - A class should not have more than 3 lessons per day
  - A class should not have more than 4 days per week
  - Only 1 or 2 lessons per morning / afternoon

- If possible, consider some preferences
  - Each class should have most of the classes in the same room
  - Teachers can have some schedule preferences



Problem formulation

- You must formulate and implement an agent that finds the best solution for class schedules, minimizing the number of days each class must travel to campus and the number of classrooms used.
- Solutions that have schedules with fewer holes should be valued. Other constraints should be added to make this problem more realistic.



Jupyter Notebook

Notebook structure

- Introduction
  - Establish here the context and the purpose of project
  - Identify the teammates: student name and number
- Goal formulation
  - Definition of the goal, possible limitations, and actions to be taken
- Plan and design an appropriate agent
  - Explain the attributes of the agent (PEAS)
  - Explain the characteristics of the task environment
  - Formulate the problem as a search problem
  - Present the algorithm used (pseudo-code)
  - Highlighting the heuristics applied

Notebook structure (2)

- Agent running
  - Provide a solution for one or, if possible, several initial states
  - Perform a critical analysis of the results and identify some future improvements to the agent.

- Conclusion
  - Insert here a conclusion about the outcomes accomplished, the development process and the tools used.
  - The structure of the notebook should be adapted according to each project characteristics.

Thank you!