Collaborative exploration of unknown environments

Mini-Guide of the system

I.Requirements:

JAVA + MASON TOOLKIT

II. Description of the files that should be used and modified eventually:

1) **Viewer.java**
   Launch this as a java Application to test the system.

2) **SimEnvironment.java**
   This file contains a certain number of parameters that can be modified:

   modeOfSwitch : Broker switch mode 0 For random zone switch…
   1 for switches based on the remaining zones to be explored, also this mode chooses the minimum distance based on the agent location. If no remaining zones are unexplored, this will pick the closest zone that has no agents at the moment

   nAgents: This can be changed to modify the number of agents in the world.

   modeStart: 1 to assign a zone randomly at start or 2 to start on the nearest zone (in the paper we always pick option 2, it's more effective).

   nbSplits : number of divisions of the map, this will split the map into nbSplits rectangles (we put a condition to avoid creating juste long stripes and prioritize more squared forms, but depending on the value this will eventually create stripes…).
   Classic values used were like 2 , 4 , 8, 20… not much more than that.

3) **ExplorerAgent.java**

   This file contains a certain number of parameters that can be modified:

   viewRange : range sensor of the Agent (usually 40)

   INTEREST_THRESHOLD etc: can be modified to choose the interest that the agents will give to each object,

   useNN: choose true to use the NN approach. If true, it's possible to choose between 2 Neural Network options, usingVersion3_NN = false s the default option that we're leaving, if this last boolean is set to true, it's important to uncomment line x and comment the other, this will use extra features (the shape) to predict objects.

4) plotsIA.py

This python file is used to compute the plots used during the project, and confidence intervals (t for small samples). There's a variable pathFileCSV; this one should be given the path of the CSV file that was written during the exploration ("stats.csv"). At the bottom of this file there's some of the data used to perform the confidence intervals (dataObj & dataError).