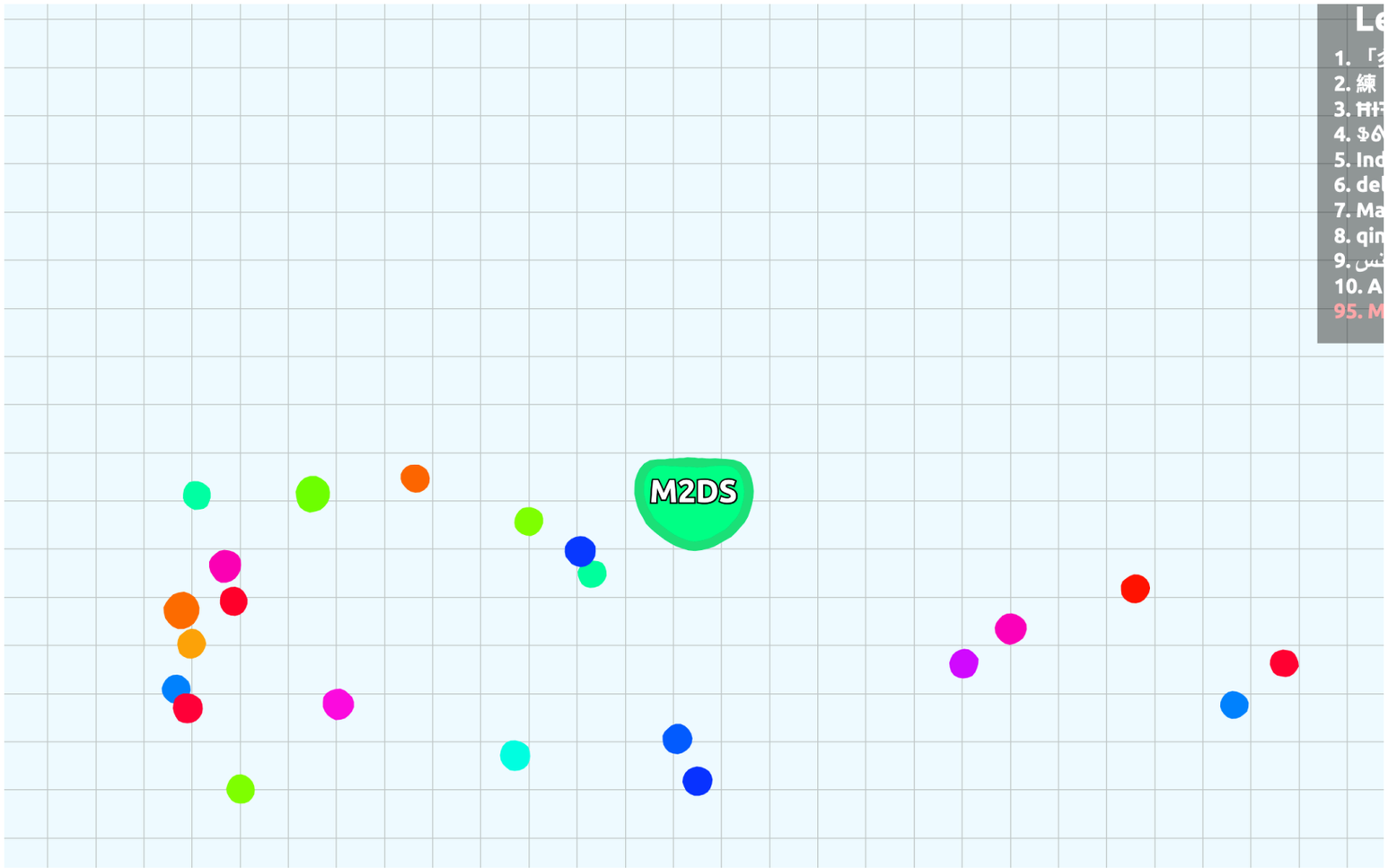
Data Camp

MASTER DATA SCIENCE, UNIVERSITY OF NANTES

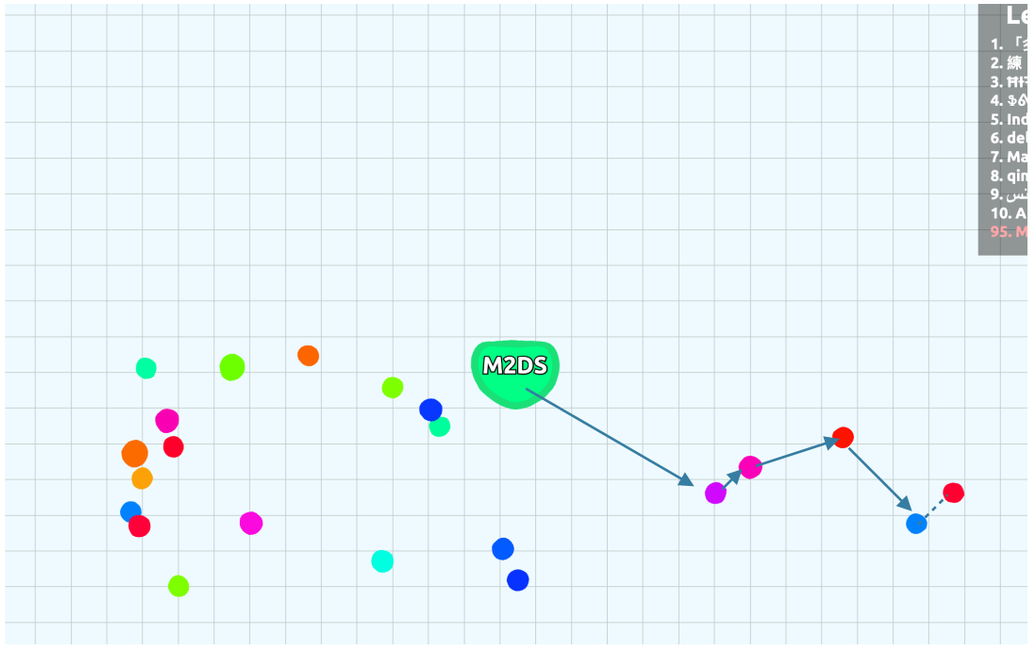


http://agar.io/

Data Camp

DATA CAMP M2DS, 2020

Living cell: the problem



You are a living cell in the game agar.io (you can try to play, to see the concept, but do not spend too much time on it! 😉). Roughly speaking, the objective is to eat as many other cells as possible, in order your cell to grow. For this data camp, you are given a limited amount of time in which you have to absorb (eat) the maximum number of cells. You start in coordinate (0,0), and you constantly move as one space unit per time unit. For instance it takes 2 time units to reach (2,0) from the starting point (0,0).

Note that the authorized moves are horizontal, vertical and diagonal. Be careful, moving from (0,0) to (1,1) costs $\sqrt{2}$ time units.

Your objective is to define the ordered list of cells so that the total size of eaten cells is maximum, given the allocated time.

For this practice, your allocated time is set to 10, 000

The input data (data.txt)

A raw text file the position and size of all the cells.

- Following lines contain the positions of the cells, and their size, with the following format: `cell_id, x, y, size`

A typical file may start as

0, 24.32, 19.04, 3

1, -4.98, 37.09, 18

2, 32.41, 18.59, 12

You will find your input file on extradoc.univ-nantes.fr (data.txt)

The output (output.csv)

A csv file containing the ordered list of cells, identified by their cell_id, on each line of the file.

A typical file may start as

21

17

0

4

Remember that if the allocated time is not sufficiently large to eat all the cell, your output will be considered as invalid !

Tentative Planning

First part

- Make your binoms
- Visualization tool
- First discussions on strategy
- Start to implement a first very naive solution

Second part

- Discussion on the first solution
- Proposition of an « intelligent » solution
- Implementation

Final part

- Oral presentation of the solution: algorithm and results

Evaluation

Each week, you will deposit at most 3 tentative output files zipped into one file on extradoc.univ-nantes.fr (Research methodology course)

Victory will belong to the most successful team (biggest size)

Be careful, you only have 3 attempts a week by group! (only the first 3 attempts are taken into account).