IEMP – Stage3

Information Exposure Maximization (IEM) is an important algorithmic problem that is proposed to solve the echo chamber effect on social media. In this project, you need to design two search algorithms, one heuristic algorithm and one evolutionary algorithm (or simulated annealing algorithm), to solve the IEM problem.

Stage1:Objective evaluation (2.0 points) Submit: Evaluator.py

Stage2:Heuristic algorithm (6.5 points) Submit: IEMP_Heur.py

Stage3:Evolutionary algorithm or simulated annealing algorithm (6.5 points) Submit: IEMP_Evol.py

Please note that in stage3 you cannot use multiple processes

Test Environment

1. Operation System: Debian 10
2. Server CPU：2.2GHz*2
3. Python version: 3.9.7

Allowed library

- numpy
- pandas
- networkx
- pymoo

For **stage 3**, there are **5 test cases** in total:

Case No.	Nodes	Edges	Baseline TL	Higher TL
case 0	475	13289	420s	380s
case 1	13984	17319	860s	780s
case 2	13984	17319	860s	780s
case 3	3454	32140	1350s	1250s
case 4	3454	32140	1350s	1250s

case0~case2 have been released to you.

Detail requirement for case 0 ~ case 2:

Case No.	Baseline	Higher requirement	Baseline TL	Higher TL	K
case 0	415	440	420s	380s	10
case 1	13580	13680	860s	780s	14
case 2	13350	13600	860s	780s	14

TL: short for Time Limits

Grading:
take **case 0** for example,
point = 0

1. First check if satisfy the input and the output requirements,

- yes add 0.1 to point
- no return 0

2. Evaluate your output(the balanced seed sets) and get the objective value:

- If the objective value >= 415(Baseline)
  AND the running time <= 420(Baseline TL), add 0.9 to point.
- If the objective value >= 440(Higher requirement)
  OR the running time <= 380(Higher TL), add 0.3 to point.