CE(Computer Engineer) of ZNU

Course: AI

Professor: Dr. Afsharchi

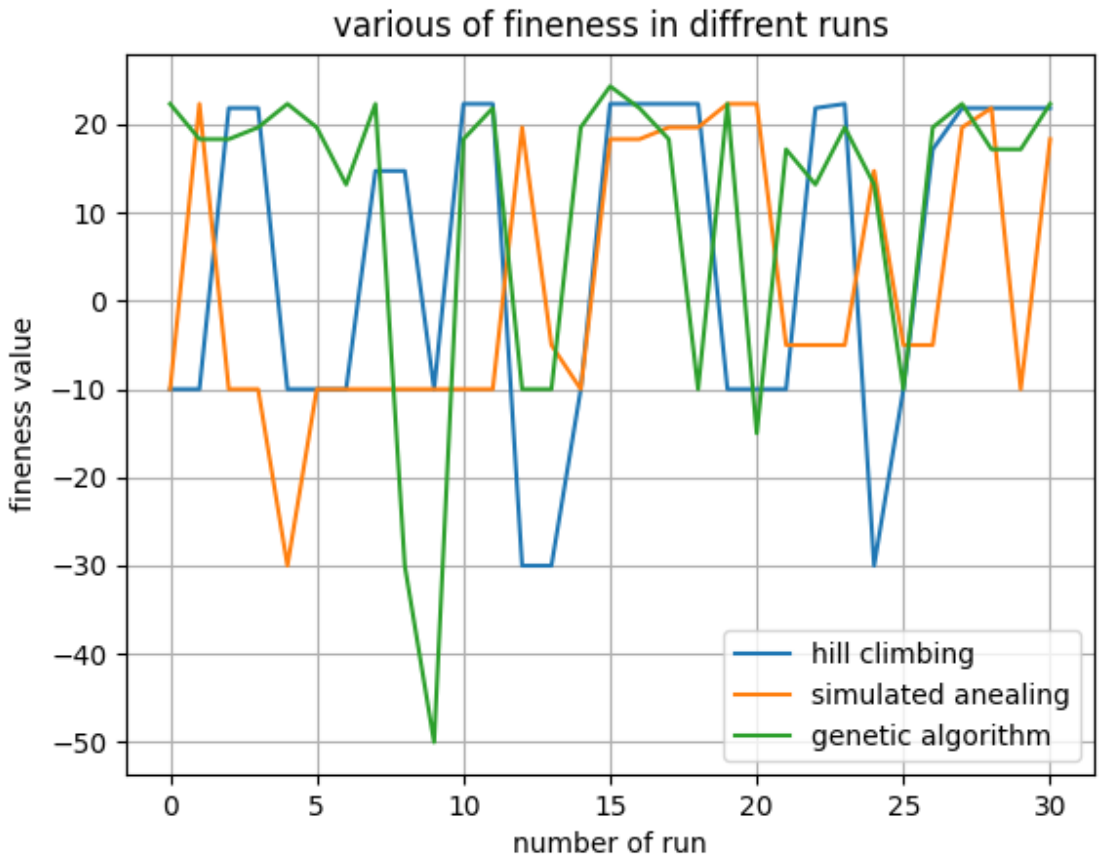
Project No.1

Amirhossein Dadashzade

Amirhossein Safari

University AI project

Output Sample:



Purpose of Question

We have some units with a unique number, the capacity of energy that can produce and the number of intervals needed for maintaining the unit.

Also, we have some intervals with a number and minimum energy that should be supplied by units.

important point: maintenance intervals should be behind together

input files

our input files include two files with the name intervals.txt and units.txt

units.txt :

- first line includes the number of units

- every 3 lines describe a unit with this format:

- first line is the unique number of unit

- second line is the capacity of energy that unit can produce

- third line is the number of intervals that need for the maintenance unit

intervals.txt :

- first line includes the number of intervals

- every 2 lines describe an interval

- first line is the number of that interval

- second line is the minimum energy required for that interval

Algorithms

we solved this question with 3 local search algorithms :

- Hill Climbing

- Simulated Annealing

- Genetic Algorithm

Hyper Parameters

Simulated Annealing :

- Temp = 100
- Every step multiplied by 0.9

Genetic Algorithm:

- Pc = 0.7
- Pm = 0.01

Libraries

- matplotlib : for showing results on a plot