Week 11 Computer Optimization

MSc Artificial Intelligence & Data Analytics

Task: Genetic Algorithm for Knapsack problem

- Read a file from data folder to get max_caapcity, profits, weights and best_solution in order to compare.
    - Set parameters for knapsack:

1.| **population_size** = 30

```
set the size of population to be created, number of possible solutions
```

2.| **mutation_denominator** = 100

```
random selection in a range of numbers
| mutation_denominator defines the end of the range for random func
*e.g.* select 1 number out of 100
```

3.| **numofGen** = 5*len(weights) # number of iterations

```
Number of iterations/generation to run the genetic algorithm
-> defines end condition of algorithm
```

4.| **convegence_percentage** = 0.8

```
also defines the end condition, but using convergence ratio
```

Execute program

$> **python3** *ga_knsapsack.py*

Output

Generates two output files, one keeps the population set (***population_out.txt***) and the other the elite solution/indivitual (***foutput.txt***). By elite means the solution with the maximum fitness/profit score.

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