Artificial Intelligence Methods (COMP2051 or AE2AIM)

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Labs 4: Heuristics & Single Point Metaheuristics

1. Introduction

In the following 3 sessions, you shall practice in using single point metaheuritics to solve a multi-dimensional knapsack problem, which is an extended version of the 1D knapsack problem that you have practiced in pervious labs and has proved to be NP-Hard. The problem has found applications in cloud computing, networking and other practical scenarios. Like in the past, you are asked to write a C/C++ program to solve this problem. A sketch program (downloadable from Moodle) is provided for you also to help you focus more on algorithm implementation.

2. Task

The tabu search and VNS are implemented in the example code:
https://moodle.nottingham.ac.uk/pluginfile.php/11644645/mod_folder/content/0/lab04.c?forcedownload=1

While the VNS contain some problem, please fix the issue to find better objective (better than 232).

The code can run in the online compiler:
https://www.onlinegdb.com/online_c_compiler

Or CS linux by:

```
gcc -lm lab02.c; ./a.out
```

After you got result, please submit it in moodle Quiz:
https://moodle.nottingham.ac.uk/mod/quiz/view.php?id=7476452