DM811 – Common Errors to Avoid in the Exam Project

Solution Methods

Application of base knowledge

A.1 Bad use of terminology. If an algorithm follows the framework of one of the (metaheuristic) methods described in class then mention its name. The misuse of terminology from other courses, like Algorithm and Data Structures, may also count here.

A.2 Misunderstanding of the methods: e.g., halting a local search before reaching local optima without adducing a convincing justification why it is done so (if a local search takes too long, consider restricting the neighborhood!); the method is an original variant of a method treated in class but no remark on the difference is given.

A.3 Theoretical error. The solution method does not solve the problem stated and no remark is given on why it is chosen to do so.

Complexity analysis in the main procedures

A.4 Absent. It should include at least the computational cost of the construction heuristics and of the neighborhood examination in local search.

A.5 Wrong or imprecise. For example, it is based on a high level language thus it neglects the cost of library functions.

A.6 Misfocused: it should not be on the data structures available in Java. It should be valid at an abstract level without need for the definition of a programming language.

Other

A.7 No attempt to prefer simplicity (Occam's razor). Quite complicated methods are applied but their use is not justified. It is not shown that they do better than other simpler methods, like Random Restart. (Complexity should be added only if strictly needed).

A.8 No incremental updates considered in local search.

Experimental Analysis

B.1 Some details in the description of the algorithms or in the experimental set up are missing. Hence, the *reproducibility* of the analysis is not guaranteed.

B.2 Lack of explanatory details in plots and figures.

B.3 Too little data collected. Base your analysis on at least 30 results.

B.4 No attempt to make an aggregate analysis.

B.5 No final table of results reported.

B.6 Analysis based on biased statistics such as the best or unfair treatment of the algorithms. See:

> M. Birattari and M. Dorigo. How to assess and report the performance of a stochastic algorithm on a benchmark problem:. Optimization Letters, 2007, 1(3), 309-311 `http://dx.doi.org/10.1007/s11590-006-0011-8`

B.7 Impossible to determine the empirical evidence of the claim because no numerical result is reported. (Unfounded speculations should be avoided.)

B.8 The aggregate analysis ignores the different scales due to different instances. No data transformation applied. Results may be confused.

Report

Length

C.1 The report is not within the length limits recommended. It is therefore unnecessarily lengthy or too short.

Writing style and clarity

C.2 Lack of spell checking. It is indicator that little care was put in the project.

C.3 Sloppy language.

C.4 Lack of formal notation makes the description imprecise.

C.5 Use of the same notation to indicate more than one thing.

C.6 Use of notation not previously introduced.

C.7 The use of concepts precedes their definition.

C.8 Algorithmic sketch used for straightforward algorithms that do not need this level of detail.

C.9 Put tables and figures on the top or on the bottom of the page.

C.10 The caption does not explain sufficiently the figure or table. It should be possible to understand the figure or table without reading the text. "The figure/boxplot shows .... The x-axis reports the ...".

C.11 Figure or Table not referred to from the text. Always refer to figures and tables by their number.

C.12 Use emphasized text when introducing a new concept that is be reused later.

C.13 Algorithm sketch not needed since the procedure has nothing different from the one given in class or in the project assignment.

C.14 Lack of a last reading.

Structure

C.15 Lack of structure overall the report.

C.16 Lack of a reference list.

Correctness of description

C.17 Algorithmic sketches are not precise enough. The algorithm does not produce the output declared or it does not stop. It allows misinterpretation.