

This assignment gives you the opportunity to integrate knowledge and experience gained throughout the course. It is due on Thu, May 1, 2003. Please send your solutions in the form of PDF files to hoos@cs.ubc.ca.

Remember that this assignment is optional. If you hand in a solution, the best two of your three assignment results count towards your final grade, and the worst does not count. (This means that other than the chance of improving one of your previous assignment results, you can't lose anything by not handing in a solution for this assignment.)

Problem 1 (Literature review; 21 marks)

Obtain and read the following paper (available from the course webpage):

R. Holte: *Combinatorial Auctions, Knapsack Problems, and Hill-climbing Search*. Lecture Notes in Computer Science, Vol. 2056, Springer Verlag, 2001.

- (a) Briefly summarise the main contributions and results of the paper (in your own words).
[3 marks]
- (b) Formally define the *N2Norm* and *N2Normx20* algorithms as SLS algorithms (see SLS Book, Chapter 1) and relate them to generic SLS methods you are familiar with.
[4 marks]
- (c) Describe the difference between the algorithms discussed in Section 2 of the paper and the “blind hillclimber” (Section 5). [3 marks]
- (d) Critically assess the empirical methodology used in this paper, based on the knowledge you gained in the course. [5 marks]
- (e) Discuss the implications of your assessment in part (d) on the validity and significance of the results presented in the paper. [3 marks]
- (f) Describe additional experiments that would be useful for a thorough and conclusive assessment of the claims and hypotheses made in this paper. [3 marks]