

1 Literature

Different articles/books that I have read are listed here with summary/comments.

1.1 Rossi chp 4.6.1

Finding the order that variables should be assigned values is very difficult. Heuristics are used for this. Most basic heuristic is to take the variable that has the smallest domain available. Another approach is the first fail, take the path where you are most likely to fail. More complex heuristics are domain divided with degree or weighted degree.

Like the approach with the smallest domain one can choose the most constraint variable. One could translate the problem into a graph structure and use a structure-guide heuristic, fx the CSP (constraint satisfactory problem?) can be modeled as to variables are neighbors if they are in the same constraint. If there is no cycles it is more efficient than domain degree heuristics. The last approach is to divide the graphs into subgraphs with a minimal number of cuts.

1.2 Estellon2009

Suggested approach to engineering local search is in three parts. Search strategy, moves and algorithmics & implementation. One can increase or decrease the search space by moving constraints to obj func or relaxing constraints. The search graph is connected to the search space and an algorithm. The graph can be expanded by introducing different moves. This should not be controlled solely by meta heuristics but through redefinition of search space and different moves. Obvious things as optimizing code by cache allocation speed up the search.

Verify and test your code. Implement debug mode, use assert and calculate function with naive method and compare.

After these steps use statistic on moves to improve code (80-20) rule.

1.3 Benoist2009

Basically using the thing proposed in Estellon2009 and put some number for their specific problem that worked out well.