Road to "Problem Solving Engines"

Toshihide IBARAKI

We describe our attempts to build problem solving engines that cover a large portion of combinatorial optimization problems encountered in real world applications.   For this, we selected a list of standard problems, and develop their solvers which are based on local search and metaheuristics.   As standard problems, we have chosen so far CSP (constraint satisfaction problem), RCPSP (recource constrained project scheduling problem), GAP (generalized assignment problem), VRP (vehicle routing problem), SCP (set covering problem), MAX-SAT (maximum satisfiability problem), 2PP (2-dimensional packing problem) and others.   In this talk, we outline definitions of some of these problems, algorithmic contents of engines, and some computational results, putting emphasis on VRP, 2PP and RCPSP.