OPTIMIZATION USING THE BRANCH AND CUT METHOD

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ABSTRACT :

In recent years the method of Branch and Cut (and its close relative Branch and Price) has emerged as a powerful technique for solving large scale Mixed Integer Linear Programming (MILP) problems. Advances in computer technology have facilitated the development of sophisticated mathematical techniques for solving many complex problems arising in business and industry. The significant progress made can be measured by noting that, in the early 1980's, mainframe computers could solve problems with up to 100 integer variables, whilst nowadays ordinary PCs and workstations can readily solve problems with thousands of integer variables. Furthermore, provably good solutions can be obtained for much larger problems. The method has been applied to solve: large scale Travelling Salesman Problems; a variety of vehicle routing problems; a number of network design problems; and various scheduling problems, graph packing, partitioning and covering problems. This paper focuses on some of our recent work on applying the branch and cut methodology to difficult combinatorial optimization problems arising in industry.