

Invited Session

Solving Traveling Salesman Problems

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Abstract

The traveling salesman problem, or TSP for short, asks for the cheapest tour passing through each of a given finite set of cities and returning to the point of departure. The most successful approach known for solving instances of the TSP is the linear-programming based method of Dantzig, Fulkerson, and Johnson from the early 1950s. In this talk we discuss some recent work on extending this approach to larger TSP instances, including the solution of an instance having 24,978 cities. Following the work of Fleischer and Tardos (1999) and Letchford (2000), we discuss progress on computational techniques for exploiting planar duality in improving the linear-programming relaxations. We also present a survey of work in parallel algorithms for large-scale TSP instances. Finally, we present an application to genome sequencing and discuss the role of exact TSP solution methods in this context.