

ABSTRACT

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Combinatorial optimization with neighborhoods

Combinatorial optimization has important applications in real world situations. Many such applications can be formulated as optimization problems defined on graphs, this is the case of planning shortest paths, spanning trees, matching problems, among others.

Traditionally this type of problems assumed implicitly the exact knowledge of the position of nodes. Nevertheless, this assumption does not always hold. Actually, uncertainty, lack of information, or some other factors may affect the relative position of the nodes.

Thus, the assumption of modelling the nodes by points with a priori known location should be revised. This paper deals with some extensions of combinatorial optimization problems on graphs using non-necessarily convex regions, so-called neighborhoods, instead of nodes.