

عنوان مقاله:

Touring a Sequence of Polygons in Weighted Regions

محل انتشار:

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خلاصه مقاله:

Given a subdivision of plane into convex polygon regions, a sequence of polygons to meet, a start point s , and a target point t , we are interested in determining the shortest weighted path on this plane which starts at s , visits each of the polygons in the given order, and ends at t . The length of a path in weighted regions is defined as the sum of the lengths of the sub-paths within each region. We will present an approximation algorithm with maximum \pm cost additive. Our algorithm is based on the shortest weighted path algorithm proposed by Mata and Mitchel [2]. The algorithm runs in $O((n3LW + RW) k \pm)3$ time, where n is the number of vertices of the region boundaries, L is the longest boundary, W is the maximum weight in the region, R is the sum of the perimeters of the regions, and k is the number of polygons. The main idea in the algorithm is to add Steiner points on the region boundaries and polygon edges. In addition, we will also present a solution to the query version of this problem. We will extend our result in unweighted version of the "Touring a Sequence of Polygons" problem [3]. We will give an approximation algorithm to solve the general case of the problem (with non-convex intersecting polygons).

کلمات کلیدی:

computational geometry, shortest path, weighted region, polygons

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