**Unified data structures to optimize solving a complex of interrelated geometric problems.**

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ABSTRACT

The paper is devoted to the development of efficient algorithmic tools for solving a set of interrelated problems of computational geometry. To do this, we propose to create a single algorithmic environment with unified data structures that will allow you to generate simple and fast procedures for solving problems as a whole. We build the generator on the basis of the strategy "divide and conquer". We can consider and other computational models that have integral properties for solving problems. For example, we can use a Voronoi Diagram or a Delaunay Triangulation.

Because a convex hull is key to a set of computational geometry tasks, we offer unified data structures to support it and other geometric objects based on a binary tree and, in particular, a weighted concatenable queue. This allows you to perform procedures for a set of tasks within no more than *O*(log*n*) time. In this case, a consistent and parallel implementation is possible.

KEYWORDS

Algorithmic tools, Computational geometry, Interrelated problems set, Single algorithmic environment, A weighted concatenable queue