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MADALGO seminars by Peyman Afshani, Aarhus University

Improved Pointer Machine and I/O Lower Bounds for Simplex Range Reporting and Related Problems

Abstract:

In simplex range reporting the goal is to preprocess a set of points such that
given a query simplex, the points inside the query can be outputted efficiently.
This is one of the fundamental and most extensively studied problems in computational geometry.

In this talk, we will focus on proving lower bounds for the problem in the pointer machine model as well as the I/O model. First, we will briefly review known results and some general techniques that are used to answer simplex range reporting queries. Next, we will review the previous lower bound techniques and then we will move to present our new improvements. We will conclude with a list of open problems.

Host: Gerth Stølting Brodal