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MADALGO seminar by Qin Zhang, Aarhus University

Tight Bounds for Distributed Streaming

Abstract:

In this talk we will discuss the distributed streaming model. In this model, we have k sites, each receiving a stream of elements over time. There is a designated coordinator who would like to track, that is, maintain continuously at all times, some function f of all the elements received from the k sites. There is a two-way communication channel between each site and the coordinator, and the goal is to track f with minimum communication. This model is motivated by applications in distributed databases, network monitoring and sensor networks.

In this talk we will first introduce the model and review the existing results in this model, and then focus on one particular problem: tracking the number of distinct elements (F_0). We will discuss both upper bound and lower bound for the F_0 problem, so as to give an example for designing algorithms / analyzing complexities in the distributed streaming model.