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COMPUTER SCIENCE COLLOQUIUM

Improved Approximation Guarantees for Weighted Matching in the Semi-Streaming Model

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Abstract:

We study the maximum weight matching problem in the semi-streaming model, and improve on the currently best one-pass algorithm due to Zelke (STACS2008) by devising a deterministic approach whose performance guarantee is 4.91 + epsilon. In addition, we study preemptive online algorithms, a sub-class of one-pass algorithms where we are only allowed to maintain a feasible matching in memory at any point in time. All known results prior to Zelke's belong to this sub-class. We provide a lower bound of 4.967 on the competitive ratio of any such deterministic algorithm, and hence show that future improvements will have to store in memory a set of edges which is not necessarily a feasible matching.

Based on joint work with Asaf Levin, Julian Mestre and Danny Segev.

Host: Joan Boyar