On Two-Pass Streaming Algorithms for Maximum Bipartite Matching

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Class of algorithms:

1. finds a maximal matching M (first-pass);
2. increases the size of the matching M (second-pass).

Note: Only strategy proven to work.

Lower Bound:

- If the first pass finds only a maximal matching, no better than a $\frac{2}{3} \approx \frac{1}{2} + 0.167$-approximation is possible in two passes.

Algorithmic:

- Even a combination of the two dominant techniques in the area cannot beat the current state-of-the-art $2 - \sqrt{2} \approx \frac{1}{2} + 0.085$-approximation.