K-Medoids for *K*-Means Seeding

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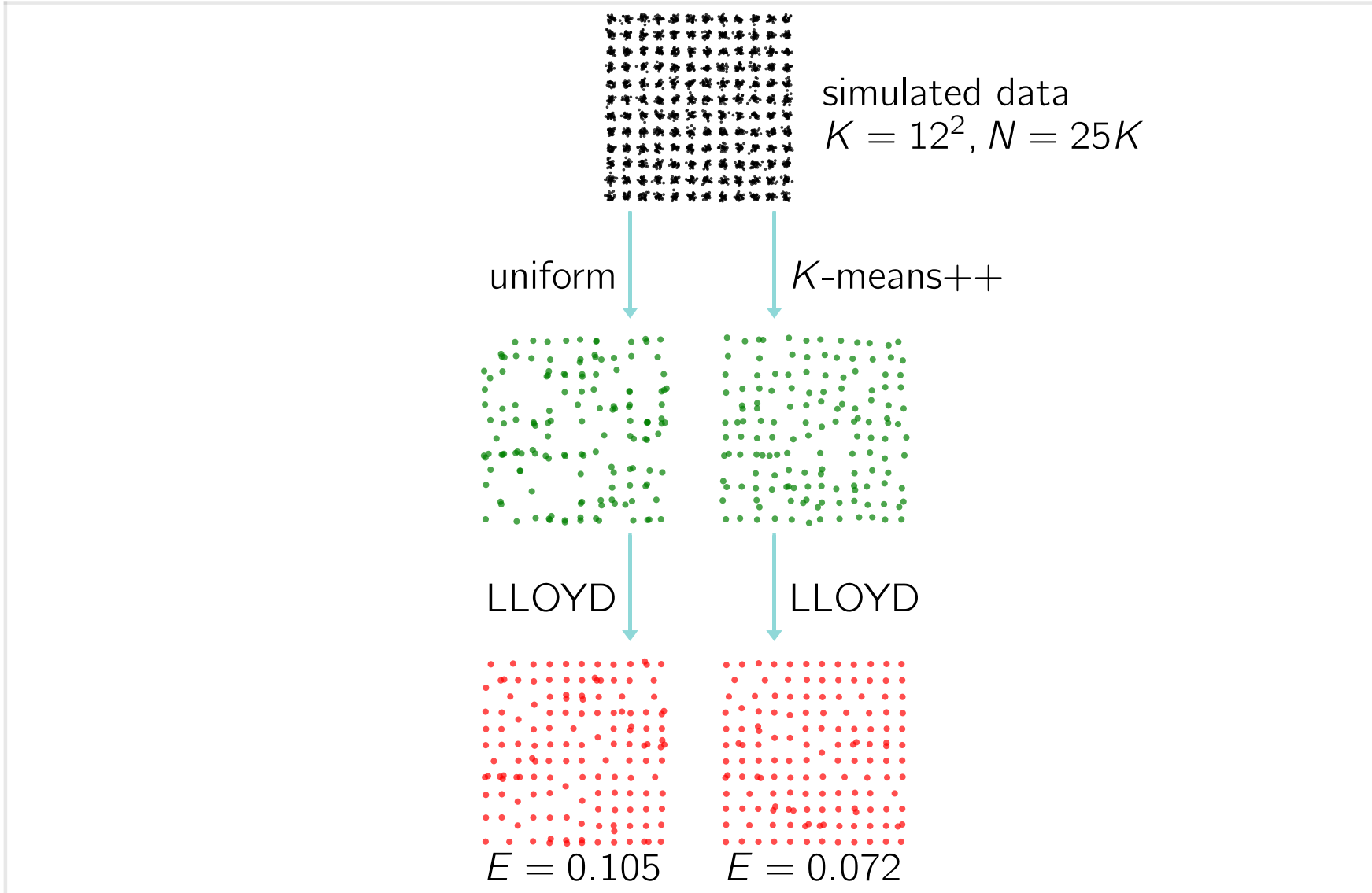
K-Means seeding, adding CLARANS



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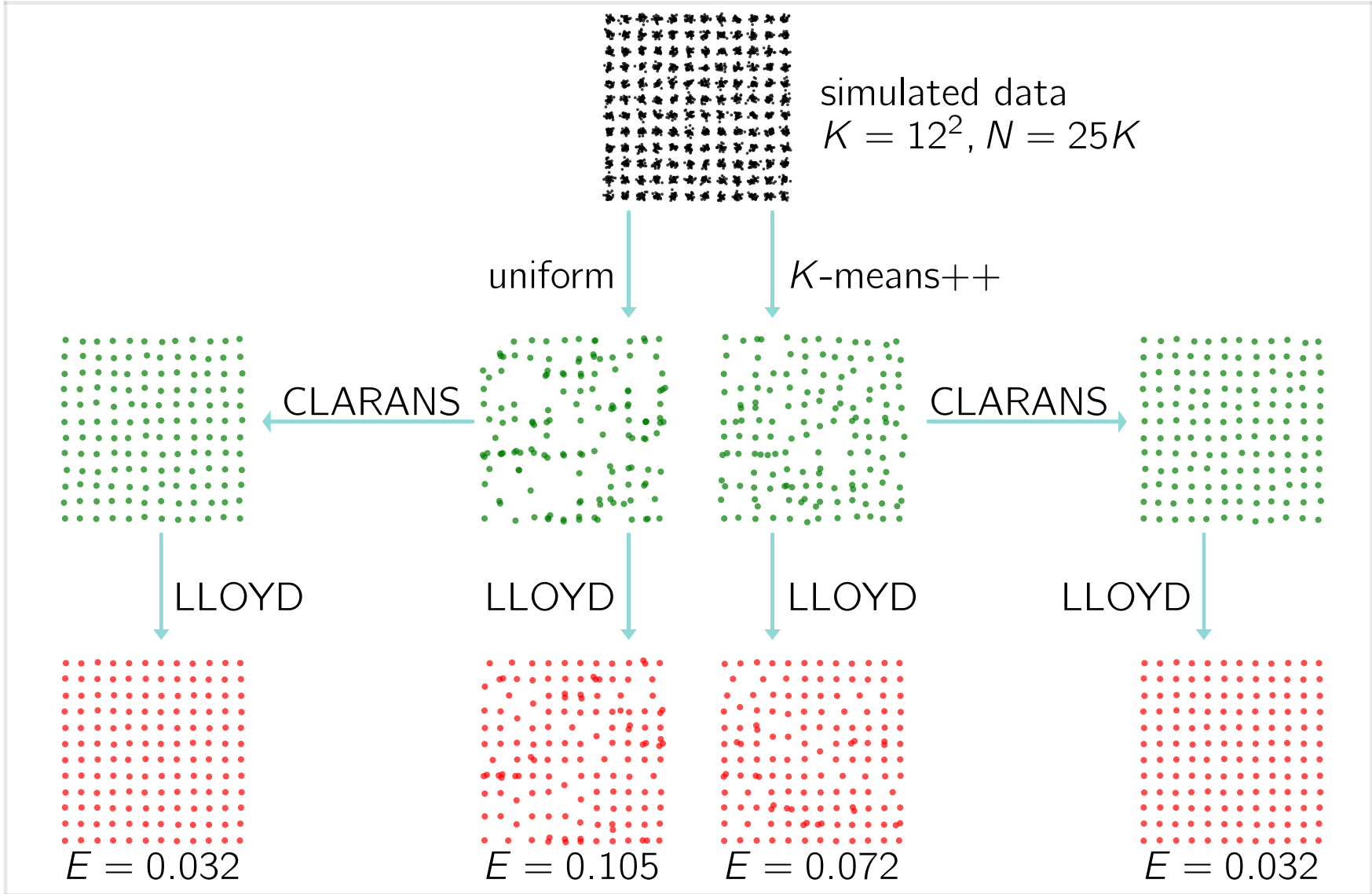

CLARANS of Ng and Han (1994)

1: **while** not converged **do**
2: randomly choose 1 center and 1 non-center
3: **if** swap decreases E **then**
4: implement swap
5: **end if**
6: **end while**

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- long-range swaps
- updating centers and samples *simultanously*.

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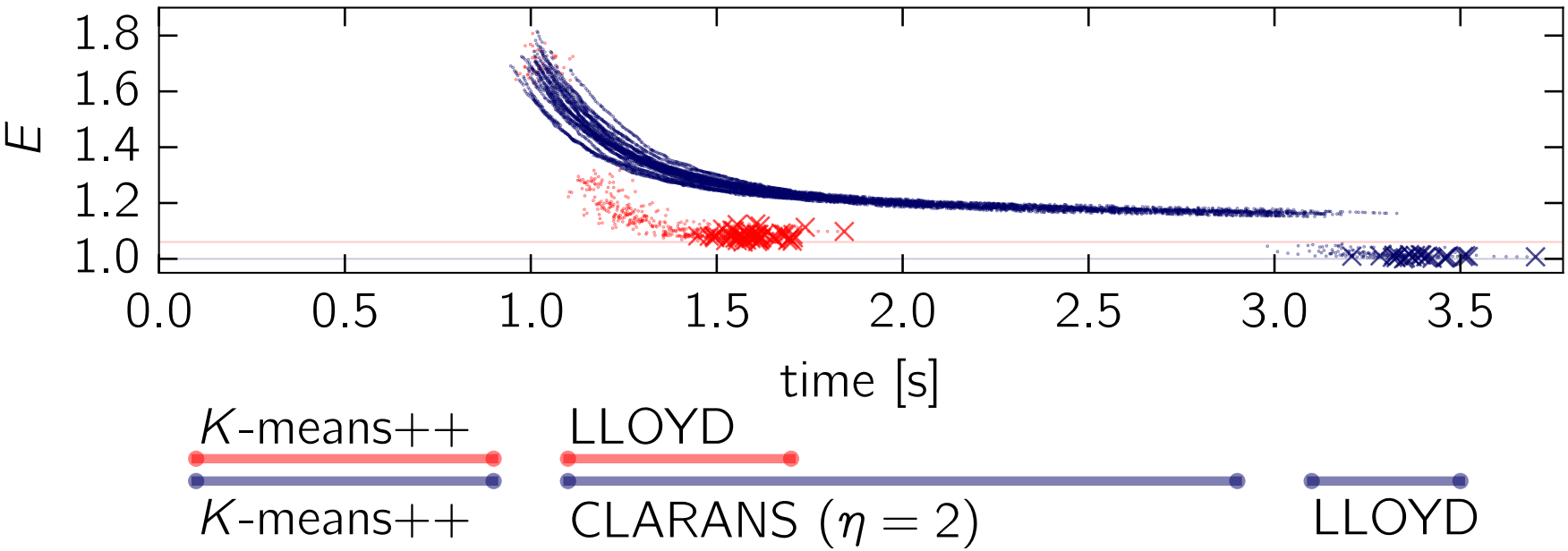
We present several algorithmic improvements, which make

- swap *proposal* $O(N/K)$
- swap *implementation* $O(N)$

Results

- RNA dataset, $d = 8$, $N = 16 \times 10^4$, $K = 400$
- Several runs with and without CLARANS.



- On 16 datasets, geometric mean improvent is 3%.

CLARANS with Levenshtein metric for sequence data, $l_0, l_1, \ldots, l_\infty$ for sparse/dense vectors, fast K-means++, LLOYD, many others, on github

The end

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