# Lecture 12.4

donderdag 5 oktober 2023 14:38

The main idea behind the median trick is to run a randomized algorithm $k$ times on a stream $\sigma$ in parallel. Then, the median of the $k$ answers is reported.

This assumes that the algorithm is 'unbiased', i.e. that the algorithm is equally likely to report answers which are too large and answers which are too small.

In the approximate median problem, picking a larger $k$ will increase the probability to obtain a good answer. More specifically, the algorithm reports a $\frac{1}{4}$-approximate median with probability at least $1 - 2\left(\frac{e}{4}\right)^{\frac{k}{4}}$ and uses $O(k \log(n+m))$ bits of storage.