# Today's Topics

- what I learned in GSI training
- revisit of MN
- lower bound on streaming median
- lower bound on streaming equi-distribution
- $1^p$ is irregular

# what I learned in GSI training

students believe they learn better[1] when

- instructor varies voice
- instructor makes gestures
- instructor seems excited
- instructor makes facial expressions

[1] in practice, they get same score on the final

# revisit of MN

- $\Sigma = \{a, b, c\}$.
- L = strings where first letter = last letter
- Where do $\epsilon$, a, b, c, aa, ab, ac, ba, bb, bc, ca, cb, cc go?

# lower bound on streaming median

- $\Sigma = \{1, 2, \ldots n\}$.
- L = strings of length $2k + 2$, where last element is median of first $2k + 1$ elements
- assume $n > k^2$
- Prove $O(k \log n)$ is possible.
- Prove $\Omega(k \log n)$ is necessary.

# lower bound on streaming equi-dist

- $\Sigma = \{1, 2, \ldots n\}$.
- L = strings of length $k$ where all elems that appear non-zero times appear the same number of times
- assume $n > k^2$
- Prove $O(k \log n)$ is possible.
- Prove $\Omega(k \log n)$ is necessary.

# $1^p$ is irregular

- $\Sigma = \{1\}$
- $L = \{1^p | p \text{ is prime } \}$
- Prove $L$ is irregular