



**Our Results**

• **Theorem:** Given  $t$  and  $r$ , there is a streaming algorithm which can compute  $\hat{x}[i]$  such that for  $\alpha \leq 1$





• Obtained by deranging [Min and Price '14]

- The algorithm uses  $\mathcal{O}(tr \log(n) + \log^2 n)$  bits of space

•  $\mathcal{O}(r \log n)$  update time



$$\Pr[|x[i] - \hat{x}[i]| > \frac{\alpha \|x\|_2}{\sqrt{t}}] \leq 2 \exp(-\alpha^2 r) + 1/\text{poly}(n)$$

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$$\Pr[|x[i] - \hat{x}[i]| > \alpha \frac{\|x\|_2}{\sqrt{t}}] \leq 2 \exp(-\alpha^2 r) + 1/\text{poly}(n)$$

- Obtained by derandomizing [Minton and Price '14]
- The algorithm uses  $O(tr \log(n) + \log^2 n)$  bits of space
  - $O(r \log n)$  update time

# How to construct Sketching Matrices?