Previous Work

Algorithms:

- Cormode, Muthukrishnan and Yi '11 : $\tilde{O}(n^{1-2/p} \cdot \text{poly}(s/\varepsilon))$ bits

- Woodruff and Zhang '12 : $\tilde{O}(s^{p-1}/\varepsilon^{\Theta(p)} \cdot \text{poly}(\log n))$

- Kannan, Vempala and Woodruff '14 : $\tilde{O}(s^p/\varepsilon^2 \cdot \text{poly}(\log n))$

- For general functions $O(s^2 \cdot c_{f,s} / \varepsilon^2 \cdot \text{poly}(\log n))$

Lower Bounds:

- Woodruff and Zhang '12 : $\Omega(s^{p-1}/\varepsilon^2)$ (s-BTX problem)

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17

Distributed functional monitoring

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The Parameter $c_{f,s}$