

Turnstile Streaming

- Initialize $x \leftarrow 0 \in \mathbb{R}^n$

• On update(i, Δ):

$$\bullet \text{ Set } x[i] \leftarrow x[i] + \Delta$$

- Answer queries about x using small space

$$\bullet \max_i |x[i]|$$

$$\bullet \sum_i |x[i]|^p \quad (F_p \text{ moments})$$

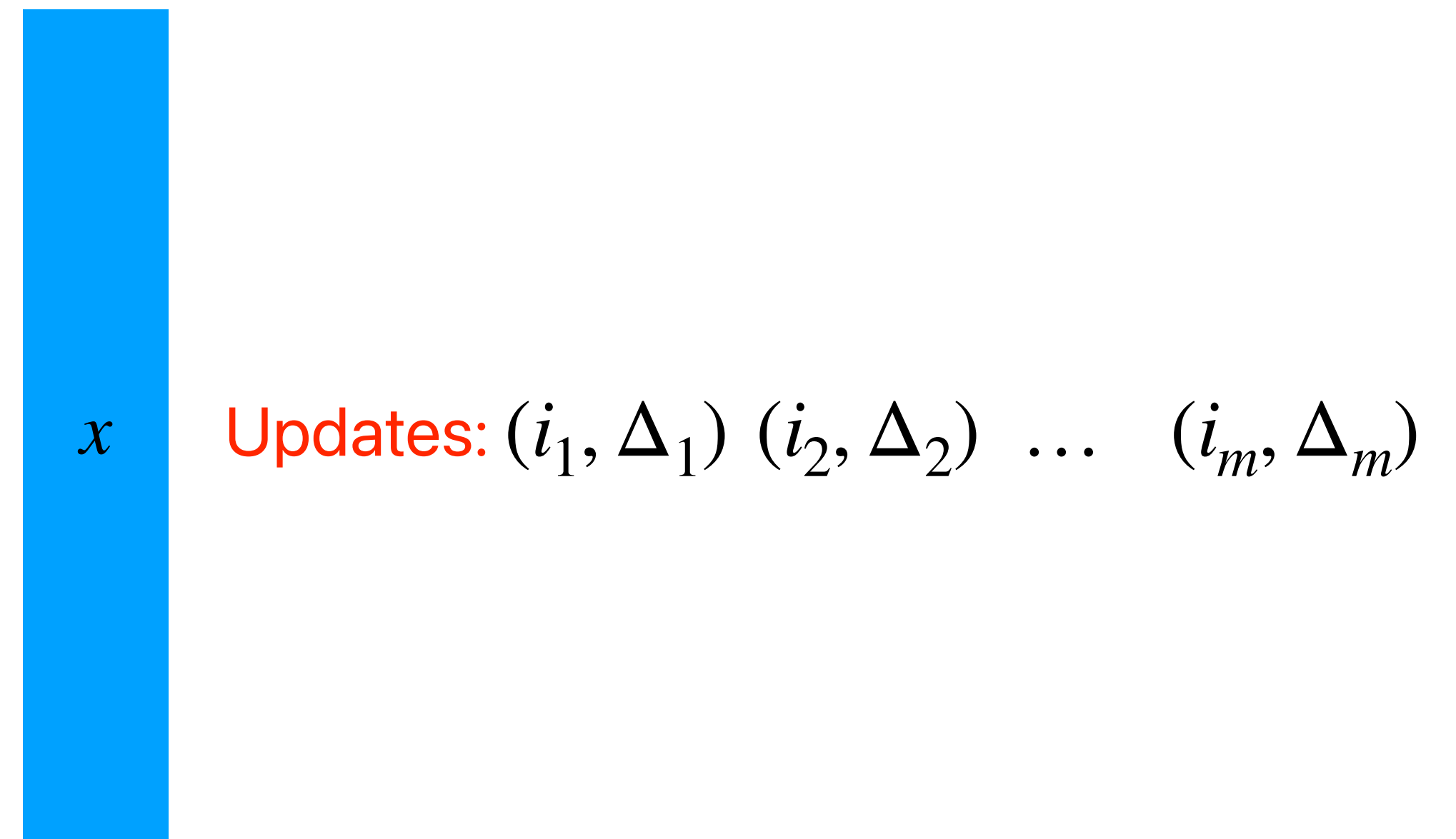
x

Updates: $(i_1, \Delta_1) (i_2, \Delta_2) \dots (i_m, \Delta_m)$



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How is Sketching Useful?

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