## Turnstile Streaming



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

#### • On update $(i, \Delta)$ :

• Set  $x[i] \leftarrow x[i] + \Delta$ 

 Answer queries about x using small space

$$\sum_{i} |x[i]|^{p}$$

## • max |x[i]|



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

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# Challenges