

# Classic Setting

- The matrix  $A$  is available to us and can be arbitrarily accessed
- Compute SVD :  $nd^2$  time
  - Very slow on modern datasets
  - Does not utilize sparsity

# Turnstile Streaming



$x$

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