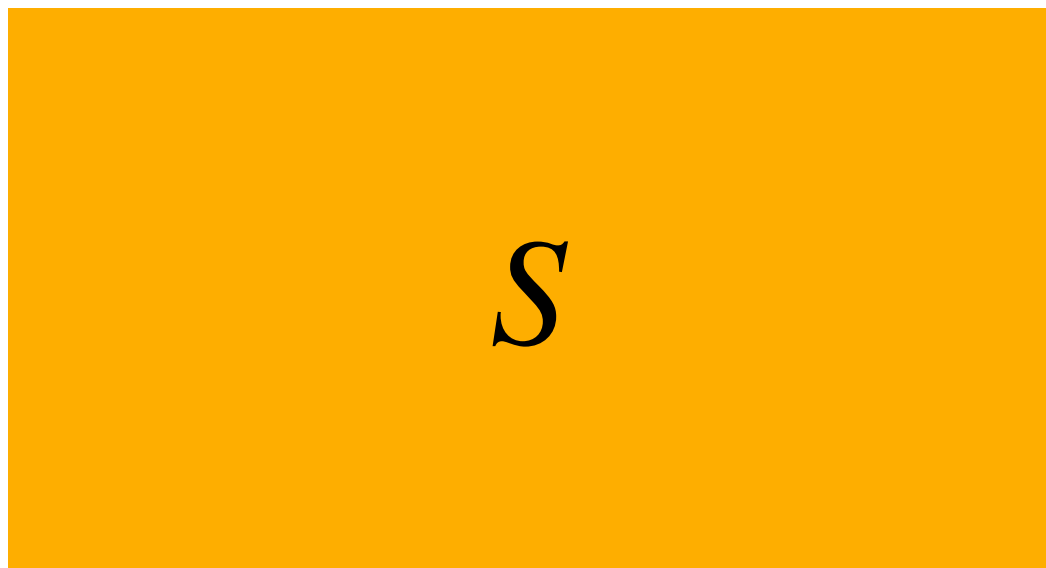


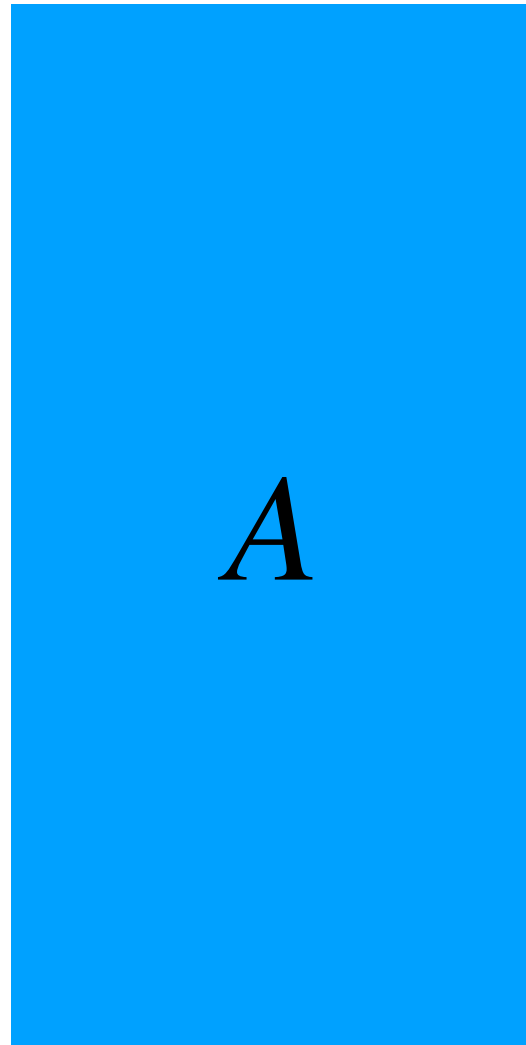
Linear Sketching

• Apply randomized linear transform

- CountSketch [Clarkson, Woodruff '13], OSNAP [Nelson, Nguyen '13], SRHT [Tropp '10], ...



\times



$=$



Sketching Matrix

- **Consolidates information into the “sketch”**



Linear Sketching

- Apply a randomized linear transform
 - CountSketch [Clarkson, Woodruff '13], OSNAP [Nelson, Nguyen '13], SRHT [Tropp '10], ...

$$\begin{array}{c} \text{Sketching Matrix} \nearrow \\ \boxed{S} \end{array} \times \boxed{A} = \boxed{\text{sk}(A)}$$

- S consolidates information into the "sketch"

An Example Problem

Principal Component Analysis