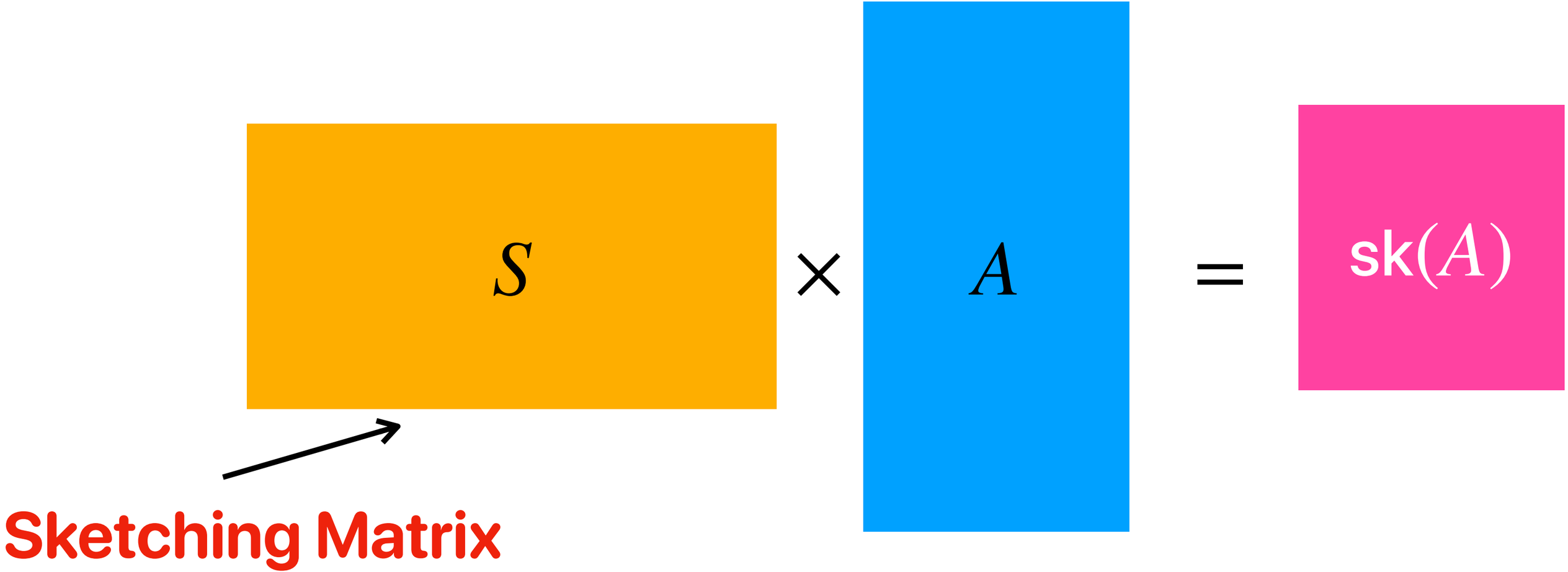
A Major Technique: Linear Sketching

- Apply a randomized linear transform

- CountSketch [Clarkson and Woodruff '13], OSNAP [Nelson and Nguyen '13], SRHT [Tropp '10, Ailon and Chazelle '06], ...


S
$\times$
A
$=$
$\mathsf{sk}(A)$
Sketching Matrix

- S consolidates information into the "sketch"

9

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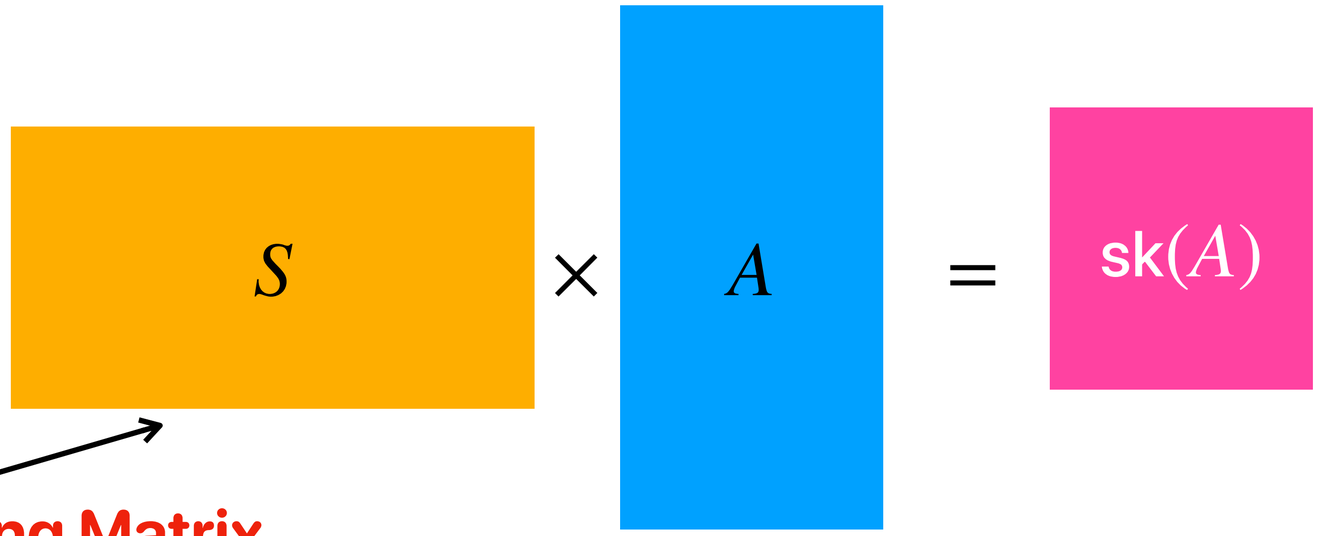

Sketching Matrix

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How is Sketching Useful?

Distributed Setting