UNIVERSITY OF
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The Initial Data Set

- Matrix M_t contains c column vectors, m_1 through m_c.

$$M_t \;=\; [\;\; m_1 \;\; m_2 \;\; \ldots \;\; m_c \;\;]$$

- Taking the SVD of M_t gives us

$$M_t = [\hat{U}_t \;\; \tilde{U}_t] \begin{bmatrix} \hat{\Sigma}_t & 0 \\ 0 & \tilde{\Sigma}_t \end{bmatrix} [\hat{V}_t \;\; \tilde{V}_t]^H$$

where $\hat{U}_t$ contains the k left singular vectors of M_t corresponding to its largest singular values, which are the orthonormal basis vectors of the desired subspace.