UNIVERSITY OF Rhode Island

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.