$$\begin{pmatrix} \Sigma_{xx} & \Sigma_{xy} \\ \Sigma_{xy}^T & \Sigma_{yy} \end{pmatrix}$$

$$\longrightarrow \begin{bmatrix} \Sigma_{xx}^{-1}\Sigma_{xx} & \Sigma_{xx}^{-1}\Sigma_{xy} \\ \Sigma_{xy}^T - \Sigma_{xy}^T & \Sigma_{yy} - \Sigma_{xy}^T\Sigma_{xy}^{-1}\Sigma_{xy} \end{bmatrix}$$

$$\longrightarrow \begin{bmatrix} I & \Sigma_{xx}^{-1}\Sigma_{xy} \\ -\Sigma_{xy}^T\Sigma_{xx}^{-1} & \Sigma_{yy} - \Sigma_{xy}^T\Sigma_{xx}^{-1}\Sigma_{xy} \end{bmatrix}$$

$$\longrightarrow \begin{bmatrix} \Sigma_{xy}^{-1} & \Sigma_{xx}^{-1}\Sigma_{xy} \\ -\Sigma_{xy}^T\Sigma_{xx}^{-1} & S \end{bmatrix}$$

Second sweep

$$D = S$$

$$B = \Sigma_{XY}^{-1} \Sigma_{XY}$$

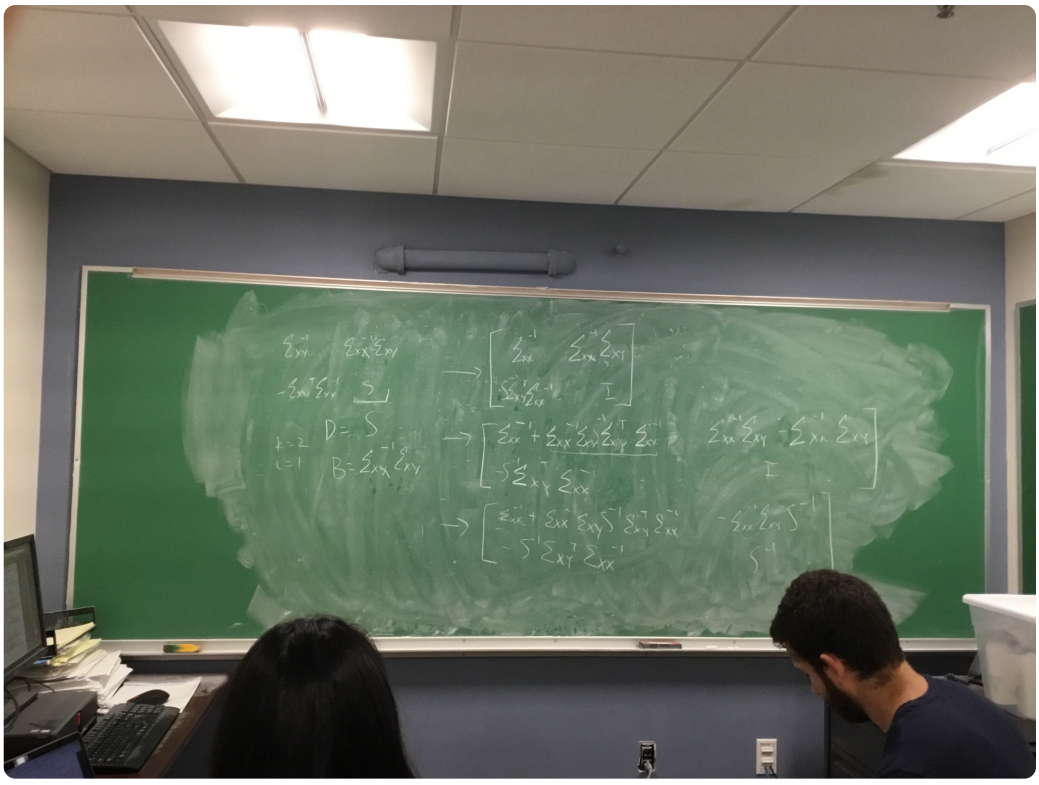
$$\begin{bmatrix} \Sigma_{XY}^{-1} & \Sigma_{XX}^{-1} \Sigma_{XY} \\ -\Sigma_{XY}^{\dagger} \Sigma_{XX}^{-1} & S \end{bmatrix}$$

$$\rightarrow \begin{bmatrix} \Sigma_{XX}^{-1} & \Sigma_{XX}^{-1} \Sigma_{XY} \\ S^{-1} \Sigma_{XY}^{\dagger} \Sigma_{XX}^{-1} & I \end{bmatrix}$$

$$\rightarrow \begin{bmatrix} \Sigma_{XX}^{-1} + \Sigma_{XX}^{-1} \Sigma_{XY} S^{-1} \Sigma_{XY}^{\dagger} \Sigma_{XX}^{-1} \\ -S^{-1} \Sigma_{XY}^{T} \Sigma_{XY}^{-1} \end{bmatrix}$$

$$\begin{bmatrix} \Sigma_{XX}^{-1}\Sigma_{XY} - B \\ I \end{bmatrix}$$

$$\rightarrow \begin{bmatrix} \Sigma_{XX}^{-1} + \Sigma_{XX}^{-1}\Sigma_{XY}S^{-1}\Sigma_{XY}^{T}\Sigma_{XX}^{-1} \\ -S\Sigma_{XY}^{T}\Sigma_{XX}^{-1} \end{bmatrix} \begin{bmatrix} -\Sigma_{XX}^{-1}\Sigma_{XY}S^{-1} \\ S^{-1} \end{bmatrix}$$



$$\begin{bmatrix} \Sigma_{XX} & \Sigma_{XY} & x-\mu_X \\ \Sigma_{XY}^T & \Sigma_{YY} & \mu_Y \end{bmatrix}$$

$$\rightarrow \begin{bmatrix} I & \Sigma_{XX}^{-1}\Sigma_{XY}\{(x-\mu_X) \\ \Sigma_{XY}^T - \Sigma_{XY}^T & \end{bmatrix}$$

$$\Sigma_{YY} - \Sigma_{XY}^{T} \Sigma_{XX}^{-1} \Sigma_{XY}$$

$$\mu_{Y} -$$