Datos (x_i, y_i) $x_i \in \mathbb{R}^d$, $y_i \in \mathbb{R}$ $\quad x_i \xrightarrow{PCA} \hat{x}_i \in \mathbb{R}^r$ $\quad r < d$

$$X_c = \begin{bmatrix} \text{---}\ x_1\ \text{---} \\ \text{---}\ x_2\ \text{---} \\ \vdots \\ \text{---}\ x_n\ \text{---} \end{bmatrix}_{n \times d} \xrightarrow{PCA} \hat{X} = \begin{bmatrix} \hat{x}_1 \\ \vdots \\ \hat{x}_n \end{bmatrix}_{n \times r}$$

$\hat{x}_i$ aproxima a x_i

$\sum \| x_i - \hat{x}_i \|$?

X_c calculamos su desc. SVD $\quad X_c = U \Sigma V^T$

$$\hat{X} = X_c V_r^T$$

$V_r^T = V^T[:, :r]$

$n \times r \quad n \times d \quad d \times r$