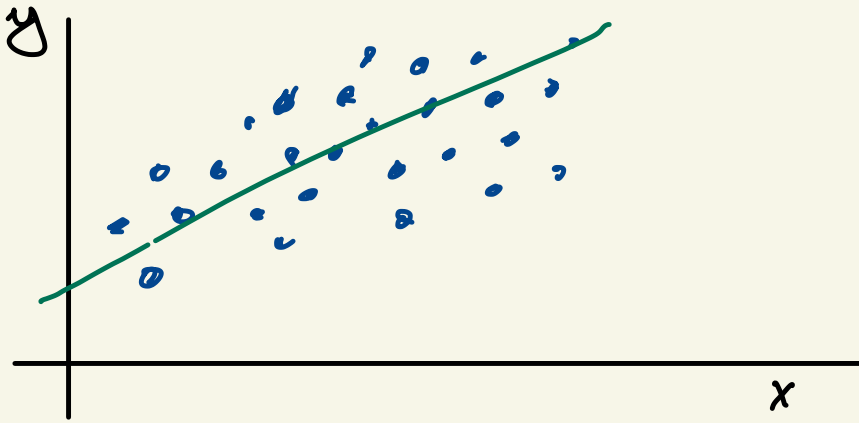


Over-determined System

Projection Linear Least square regression



$$y = mx + b = c + Dx$$

Design Matrix

$$\begin{bmatrix} c \\ 0 \end{bmatrix} = X = (A^T A)^{-1} (A^T b)$$
$$P = Ax$$
$$\begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \\ \vdots \\ \vdots \\ \vdots \\ 1 \end{bmatrix} \quad A \quad \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ \vdots \\ \vdots \\ \vdots \\ x_n \end{bmatrix} \quad X \quad \begin{bmatrix} c \\ D \end{bmatrix} = \begin{bmatrix} y_1 \\ y_2 \\ y_2 \\ \vdots \\ \vdots \\ y_n \end{bmatrix} \quad b$$