Exercise 04 - Linea regression - Tutorial notes

$j \to D = M \times M$

$i \to N = N_0 \times N_p$

$j = j_a + M j_b$

$i = i_p + N_p i_0$

$\beta_j = M_j$

$y_i = S_j$

$X_{i,j}$

linear projection
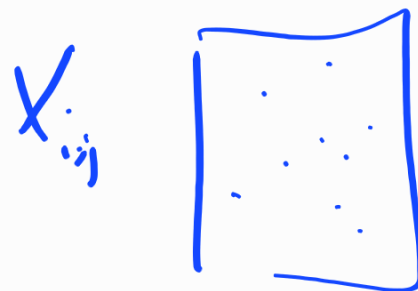
$\beta \sim y$

tomogram

sinogram

$$X_{i,j} = W_{i,j} \quad \beta_j \text{ (pixels)} \qquad y_i \text{ (response)}$$

tomogram

sinogram

$X_{i,j}$

j: pixels

i: sensor $\times$ angles

sparse! each pixel can only
matrix! contribute to max 2 sensors
elements

For each α_i:

Projections

$$\mathbf{n}^T \underbrace{\boxed{}}_{2} \cdot \underset{2}{\boxed{\phantom{G_{D=M\times M}}}}^{G}{}_{D=M\times M} \quad + \quad S_0 \;=\; 1\!\boxed{\phantom{P_{D=M\times M}}} \quad \overset{P}{D=M\times M}$$

$\downarrow$

2: only 2 affected pixels

pixel locations