$$\underset{P\times 1}{p} = \underset{P\times N}{R}\ \underset{N\times 1}{f}$$

On cherche N pixels
étant
donné
P projections

Méthode algébrique

$$\cancel{R^{-1} p = R^{-1} R_{P\times N}}$$

$$R^T_{N\times P}\, p_{P\times 1} = R^T_{N\times P} R_{P\times N}\, f_{N\times 1}$$

$$\underline{(R^T R)^{-1} R^T p = f}$$

~~mét~~ pseudo-inverse

Si $N \gg P$

solution dégueux

$$\underset{f}{\operatorname{argmin}} \| p - Rf \|^2$$

objective: $M(f) \rightarrow (p_{P\times 1} - Rf)^2 = 0$

"moindre-carré"

$$\frac{\partial M(f)}{\partial f} = 0$$

$$-2R^T(\underbrace{p}_{P\times 1} - \underbrace{Rf}_{P\times N\; N\times 1}) \cancel{R_{P\times N}} = 0$$

$P\times 1$

$$-2R^Tp + 2R^TRf = 0$$

$$\cancel{2}R^TRf = \cancel{2}R^Tp$$

$$f = (R^TR)^{-1}R^Tp$$

comme la pseudo-inverse

$$\underset{f}{\operatorname{argmin}} \|p - Rf\|^2 + \lambda \|\nabla f_i\|_1$$

$|\nabla f|$

Variation Totale

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optimisation