$$m = \sum_{s \in \text{sensors}} w_s r_s$$

w_s: weight to be estimated; r_s: sensor reading

If we have a set of measurements for known masses ~~we ea~~ this translates into the following matrix equation.

$$R \vec{w} = \vec{m}$$

$$\begin{bmatrix} r_{\text{seat,f,l},1} & r_{\text{seat,f,r},1} & r_{\text{seat,r,l},1} & r_{\text{seat,r,r},1} & r_{\text{plate},1} & \cdots \\ & & & & & \end{bmatrix} \begin{bmatrix} w_{s,1} \\ w_{s,2} \\ w_{s,3} \\ w_{s,4} \\ w_{p,1} \\ \vdots \\ w_{p,2} \end{bmatrix}$$

$$= \begin{bmatrix} m_1 \\ m_2 \end{bmatrix}$$

$$\hat{w} = (R^T R)^{-1} R^T \vec{m}$$