



'A' in image  $A_I = \begin{bmatrix} 753 \\ 266 \end{bmatrix}$

'A' in world  $A_w = [0,0,0]$

We know

$$A_I = P A_w$$

This eq<sup>n</sup> is homogenous

$$\begin{bmatrix} \lambda & 753 \\ \lambda & 266 \\ \lambda & \end{bmatrix} = k \begin{bmatrix} 1 & 0 & 0 & -x_c \\ 0 & 1 & 0 & -(-1.65) \\ 0 & 0 & 1 & -z_c \end{bmatrix} \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} 753\lambda \\ 266\lambda \\ \lambda \end{bmatrix} = \begin{bmatrix} 721.53 & 0 & 609.55 \\ 0 & 721.53 & 172.85 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} -x_c \\ 1.65 \\ -z_c \end{bmatrix}$$

$$\Rightarrow 753x = -721.53 x_c - 609.55 z_c \quad - (1)$$

$$266x = 721.53 \times 1.65 - z_c 172.85 \quad - (2)$$

$$x = -z_c \quad - (3)$$

II

$$-266 z_c = 721.53 \times 1.65 - 172.85 z_c$$

$$\Rightarrow z_c = \frac{1190.525}{-93.15} \approx -12.78 \Rightarrow z_c = -12.78$$

$$x = 12.78 //$$

I

$$753 \times 12.78 = -721.53 x_c + 609.55 \times 12.78$$

$$\Rightarrow x_c = \frac{-1833.291}{721.53}$$

$$\Rightarrow x_c = -2.54$$

$$P = K$$

$$\begin{bmatrix} 1 & 0 & 0 & 2.54 \\ 0 & 1 & 0 & 1.65 \\ 0 & 0 & 1 & 12.64 \end{bmatrix}$$





