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# Trabajo Voluntario 1

Introducción a la Robótica Inteligente

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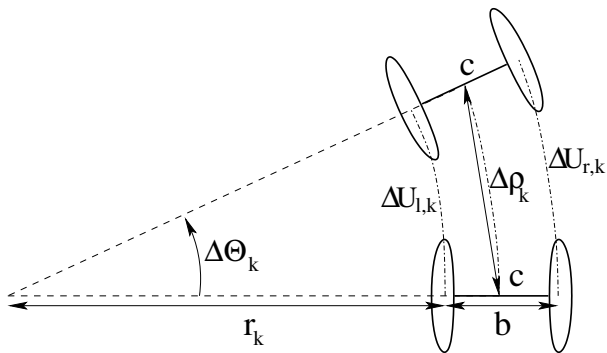
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12 de febrero de 2020

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## 1 Solución

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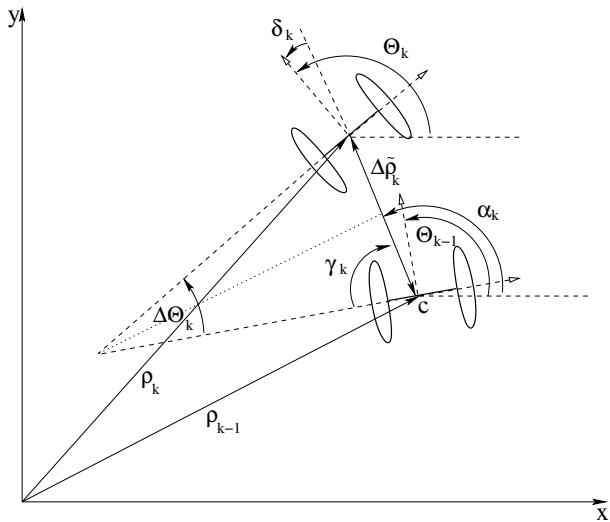
## 1 Solución



$$\Delta\theta_k = (\Delta U_{r,k} - \Delta U_{l,k})/b$$

$$\Delta\rho_k = (\Delta U_{r,k} + \Delta U_{l,k})/2$$

$$\Delta\tilde{\rho}_k = (r_k + b/2) \cdot 2 \cdot \sin(\Delta\theta_k/2)$$



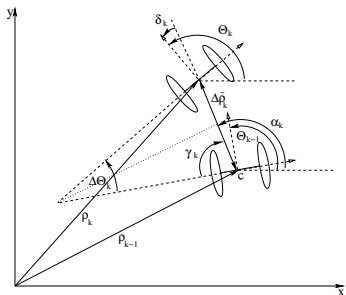
$$\mathbf{x}_{k-1} = [x_{k-1} \quad y_{k-1} \quad \theta_{k-1}]^T \quad (1)$$

$$\mathbf{x}_k = \begin{bmatrix} x_{k-1} + \Delta\tilde{\rho}_k \cos(\alpha_k) \\ y_{k-1} + \Delta\tilde{\rho}_k \sin(\alpha_k) \\ \alpha_k + \delta_k \end{bmatrix} \quad (2)$$

$$\gamma_k = \pi/2 - \Delta\theta_k/2 \quad | \quad \delta_k = \pi/2 - \gamma_k \quad (3)$$

$$\alpha_k = \pi - \gamma_k + (\theta_{k-1} - \pi/2) = \theta_{k-1} + \Delta\theta/2 \quad (4)$$

$$\mathbf{x}_k = \mathbf{x}_{k-1} + \begin{bmatrix} \Delta\tilde{\rho}_k \cos(\theta_{k-1} + \Delta\theta_k/2) \\ \Delta\tilde{\rho}_k \sin(\theta_{k-1} + \Delta\theta_k/2) \\ \theta_{k-1} + \Delta\theta_k \end{bmatrix} \quad (5)$$



**GRACIAS!!**

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