PRACTICA 2

CINEMATICA DE ROBOTS

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grupo: 8°b

materia: cinematica de robots

NUMERO 7) (2,8)(7,-4)(-3,-9) $l1 = 30 \quad l2 = 20$

(2,8)

$$q2 = \text{atan}\left(\frac{(2)^2 + (8)^2 - (30)^2 - (20)^2 - 1232}{2(30)(20)} \quad \frac{}{1200}\right) = -1.026$$

$$q2 = \text{atan}\,(-1.026)$$

$$q2 = -45.735$$

$$q1 = \text{atan}\left(\frac{8}{2}\right) - \text{atan}\left(\frac{20sen(-45.735)}{30 + 20\cos(-45.735)}\right) = \frac{14.322}{43.959}$$

$$q1 = \text{atan}(4) - \text{atan}(-0.325) = 93.967$$

(7,4)

$$q2 = \text{atan}\left(\frac{(7)^2 + (4)^2 - (30)^2 - (20)^2 - 1235}{2(30)(20)} \quad \frac{}{1200}\right) = -1.029$$

$$q2 = \text{atan}\,(-1.029)$$

$$q2 = -45.818$$

$$q1 = \text{atan}\left(\frac{-4}{7}\right) - \text{atan}\left(\frac{20sen(-45.818)}{30 + 20\cos(-45.818)}\right) = \frac{14.342}{43.938}$$

$$q1 = \text{atan}(-0.571) - \text{atan}(-0.326) = -11.670$$

(-3,-9)

$$q2 = \text{atan}\left(\frac{(-3)^2 + (-9)^2 - (30)^2 - (20)^2 - 1210}{2(30)(20)} \quad \frac{}{1200}\right) = -1.008$$

$$q2 = \text{atan}\,(-1.008)$$

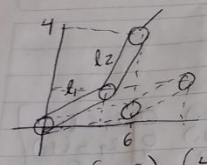
$$q2 = -45.228$$

$$q1 = \text{atan}\left(\frac{-9}{-3}\right) - \text{atan}\left(\frac{20sen(-45.228)}{30 + 20\cos(-45.228)}\right) = \frac{14.198}{44.085}$$

$$q1 = \text{atan}(3) - \text{atan}(-0.322) = -11.670$$

Practica # 2 (4,6)

26-03-19
Flavio A.



encontrar los angulos de posición en posición original (4,6) $l_1 = 30$ $l_2 = 20$

1= (3,2) (4,-1) (-5,3) (-8,-8)
2= (-5,-2) (-2,1) (7,3)
3= (1,-3) (5,2) (-4,3)
4= (-2,7) (2,-7) (-9,3)
5= (8,3) (7,5) (-1,1)

7) (2,8) (7,-4) (-3,-9)

$$q_2 = \text{atan}\left(\frac{(2)^2+(8)^2-(30)^2-(20)^2}{2(30)(20)}\right) = \frac{-7232}{1200} =$$

$= -7.026$

$q_2 = \text{atan}(-7.026)$ $\quad q_2 = -45.735$

$$q_1 = \text{atan}\left(\frac{8}{2}\right) - \text{atan}\left(\frac{20\,\text{sen}(-45.735)}{30+20\cos(-45.735)}\right) = \frac{-14.322}{-43.959}$$

$q_1 = \text{atan}(4) - \text{atan}(-0.325) = 193.967$

(7,-4)

$$q_2 = \text{atan}\left(\frac{(7)^2+(-4)^2-(30)^2-(20)^2}{2(30)(20)}\right) = \frac{-1235}{1200} =$$

$= -7.029$ $\quad q_2 = -45.818$

$$q_1 = \text{atan}\left(\frac{-4}{7}\right) - \text{atan}\left(\frac{20\,\text{sen}(-45.818)}{30+20\cos(-45.818)}\right) = \frac{-14342}{43.935}$$

$q_1 = \text{atan}(-0.577) - \text{atan}(-.326) = -77.67$

(-3, -9)

$$q_2 = a\tan\left(\frac{(-3)^2 + (-9)^2 - (30)^2 - (20)^2}{2(30)(20)}\right)\left(\frac{12.10}{7200}\right) = -7.008$$

$q_2 = a\tan(-7.008) = -45.228$ $\quad q_2 = -45.228$

$q_1 = a\tan\left(\frac{-9}{-3}\right) - a\tan\left(\frac{20\,sen(-45.228)}{30 + 20\cos(-45.228)}\right) = \frac{-14.198}{44.085} = .322$

$q_1 = a\tan(3) - a\tan(-0.322) = 89.47$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -30\,sen(89.47) - 20\,sen(89.47 + (-45.228)) - 20\,sen(89.47 + (-45.228)) \\ 30\cos(89.47) + 20\cos(89.47 + (-45.228)) + 20\cos(89.47 + (-45.228)) \end{bmatrix}$$

(2, 8)

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -30\,sen(93.967) - 20\,sen(93.967 + (-45.735)) - 20\,sen(93.967 + (-45.735)) \\ 30\cos(93.967) + 20\cos(93.967 + (-45.735)) + 20\cos(93.967 + (-45.735)) \end{bmatrix}$$

(7, -4)

$$\begin{bmatrix} x \\ y \end{bmatrix} \begin{bmatrix} -30\,sen(-77.670) - 20\,sen(-77.670 + (-45.818)) - 20\,sen(-77.670 + (-45.818 \\ 30\cos(-11.670) + 20\cos(-11.670 + (-45.818)) + 20\,sen(-77.670 + (-45.818)) \end{bmatrix}$$

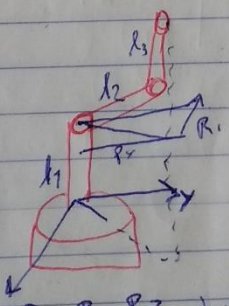
26-03-

$$q_1 = a\tan\left(\frac{P_y}{P_x}\right)$$

$$\cos q_3 = \frac{P_x^2 + P_y^2 + P_z^2 - l_2^2 - l_3^2}{2 l_2 l_3}$$

$$sen\ q_3 = \pm\sqrt{1 - \cos^2 q_3}$$

$$q_3 = \left(\frac{\pm\sqrt{1 - \cos^2 q_3}}{\cos q_3}\right)$$



Datos: P_x, P_y, P_z donde se quiere saber el extremo del robot.