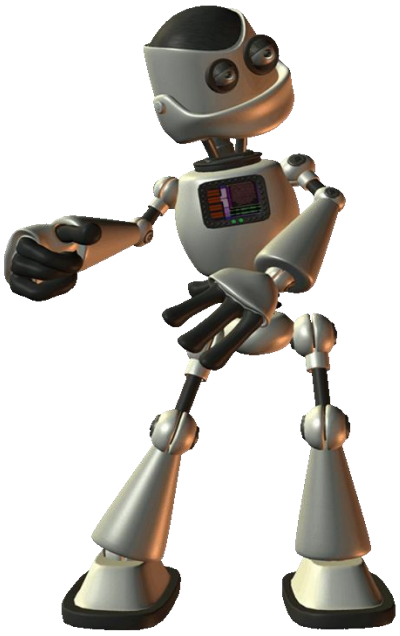
UNIVERSIDAD POLITECNICA DE LA ZONA METROPOLITANA DE GUADALAJARA

CINEMATICA DE ROBOTS



INGENIERIA MECATRONICA 8°B

TAREA #3

MAESTRO:

CARLOS ENRIQUE MORAN GARABITO

ALUMNO:

ALEXIS ISRAEL VIORATO ARAMBULA

MATRICES

1- X=60° Y=70° Z=10°

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos 60 & -\sin 60 \\ 0 & \sin 60 & \cos 60 \end{pmatrix} \begin{pmatrix} \cos 70 & 0 & \sin 70 \\ 0 & 1 & 0 \\ -\sin 70 & 0 & \cos 70 \end{pmatrix} \begin{pmatrix} \cos 10 & \sin 10 & 0 \\ \sin 10 & \cos 10 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$(XY)(Z) \begin{pmatrix} .342 & 0 & .94 \\ (.888 & .5 & -.200 \\ -.312 & .866 & .171 \end{pmatrix} \quad R= \begin{pmatrix} 336 & -.6 & .94 \\ .888 & .351 & .296 \\ -.312 & .934 & .171 \end{pmatrix}$$

2- X=40° Y=10° Z=50°

$$\begin{pmatrix} 1 & 0 & 0 \\ (0 & \cos 10 & -\sin 10) \\ 0 & \sin 10 & \cos 10 \end{pmatrix} \begin{pmatrix} \cos 100 & \sin 10 \\ 0 & 1 & 0 \\ -\sin 100 & \cos 10 \end{pmatrix} \begin{pmatrix} \cos 50 & -\sin 50 & 0 \\ (\sin 50 & \cos 50 & 0) \\ 0 & 0 & 1 \end{pmatrix}$$

$$(XY)(Z) \begin{pmatrix} -.839 & 0 & -.544 \\ (.405 & .660 & -.625) \\ -.362 & .745 & .558 \end{pmatrix} \quad \begin{pmatrix} -839 & -1402 & -.524 \\ (.4052 & -.978 & -.777) \\ -.362 & .571 & .733 \end{pmatrix}$$

3- X= 30 Z=10 y=30

$$\begin{pmatrix}1 & 0 & 0\\ 0 & \cos 30 & -\sin 30\\ 0 & \sin 30 & \cos 30\end{pmatrix} \quad \begin{pmatrix}\cos 10 & -\sin 10 & 0\\ \sin 10 & \cos 10 & 0\\ 0 & 0 & 1\end{pmatrix} \quad \begin{pmatrix}\cos 30 & 0 & \sin 30\\ 0 & 1 & 0\\ -\sin 30 & 0 & \cos 30\end{pmatrix}$$

(XZX)(R) R=

$$\begin{pmatrix}.9998 & 0 & 0\\ .296 & .4546 & .8398\\ .1709 & .8398 & .5150\end{pmatrix}$$

4 – X= 30 z=10 y=30

X=30® Z=10® Y=30®

$$\begin{pmatrix}\cos 30 & 0 & \sin 30\\ 0 & 1 & 0\\ -\sin 30 & 0 & \cos 30\end{pmatrix} \quad \begin{pmatrix}\cos 10 & -\sin 10 & 0\\ \sin 10 & \cos 10 & 0\\ 0 & 0 & 1\end{pmatrix} \quad \begin{pmatrix}\cos 10 & -\sin 10 & 0\\ \sin 10 & \cos 10 & 0\\ 0 & 0 & 1\end{pmatrix}$$

(XZX)(R)

$$\begin{pmatrix}.8528 & -.1503 & .5\\ .1736 & .9848 & 0\\ .4924 & .0868 & .860\end{pmatrix}$$

5- X=42® Z=18® X=30®

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos 10 & -\sin 10 \\ 0 & \sin 10 & \cos 10 \end{pmatrix} \quad \begin{pmatrix} \cos 50 & -\sin 50 & 0 \\ \sin 50 & \cos 50 & 0 \\ 0 & 0 & 1 \end{pmatrix} \quad \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos 10 & -\sin 10 \\ 0 & \sin 10 & \cos 10 \end{pmatrix}$$

$$(XZ)(X) = \begin{pmatrix} .60 & .75 & 0 \\ -.306 & .169 & -20 \\ -.684 & .601 & .108 \end{pmatrix} \qquad R = \begin{pmatrix} .931 & -.309 & 0 \\ .290 & .694 & -.343 \\ .105 & .826 & 994 \end{pmatrix}$$

Ingeniería Mecatrónica 8°B

TEMA: Alexis Vrorato Arambula

FECHA: 22/Enero/2019

1-

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & -0.952 & 0.3043 \\ 0 & -0.304 & 0.952 \end{bmatrix} \cdot \begin{bmatrix} 0.6333 & 0 & 0.2738 \\ 0 & 1 & 0 \\ -0.773 & 0 & 0.633 \end{bmatrix} = \begin{bmatrix} .633 & 0 & .7738 \\ .2356 & -.952 & -.1923 \\ .7358 & -.304 & -.6026 \end{bmatrix}$$

$$\begin{bmatrix} .633 & 0 & .7738 \\ .2356 & -.952 & -.1923 \\ .7358 & -.304 & -.6026 \end{bmatrix} \cdot \begin{bmatrix} .8290 & .5440 & 0 \\ -.5440 & .8340 & 0 \\ 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} .5310 & .3447 & .7738 \\ .2002 & .0064 & -.1923 \\ -.4519 & .6553 & -.6026 \end{bmatrix}$$

2-

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & .7660 & -.6427 \\ .115 & 1.015 & .766 \end{bmatrix} \cdot \begin{bmatrix} .9848 & -.1736 & 0 \\ .1736 & .9848 & 0 \\ 0 & .7660 & .6427 \end{bmatrix} = \begin{bmatrix} .9848 & -.1736 & 0 \\ .1329 & .7543 & -.6427 \\ .115 & .634 & .766 \end{bmatrix}$$

$$\begin{bmatrix} .9848 & -.1736 & 0 \\ .1329 & .4336 & -.6427 \\ .115 & 1.015 & .766 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 & 0 \\ 0 & .6427 & -.7660 \\ 0 & .7660 & .6427 \end{bmatrix} = \begin{bmatrix} .9848 & -.1115 & .1329 \\ .1329 & -.0045 & -.9909 \\ .115 & .9929 & .008 \end{bmatrix}$$

3-

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & .9396 & -.3420 \\ 0 & .3420 & .9396 \end{bmatrix} \cdot \begin{bmatrix} .0510 & 0 & .3090 \\ 0 & .7660 & .0000 \\ -.3090 & .46 & .1510 \end{bmatrix} = \begin{bmatrix} 0.951 & 0 & 0.309 \\ 0.1056 & .9396 & -.3252 \\ -.2403 & .342 & .8435 \end{bmatrix}$$

$$\begin{bmatrix} .951 & 0 & 0.309 \\ .1056 & -.9396 & -.3252 \\ -.2403 & .342 & .8435 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 & 0 \\ 0 & .8660 & -.5 \\ 0 & .5 & .8660 \end{bmatrix} = \begin{bmatrix} .951 & .545 & .2675 \\ .1056 & .6510 & -.754 \\ -.2403 & .7424 & .6027 \end{bmatrix}$$