UNIVERSIDAD POLITÉCNICA
DE LA ZONA METROPOLITANA DE GUADALAJARA

TAREA 3

Cinemática De Robots

22 DE ENERO DE 2019

UPZMG 8.-B T/M
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X=60° Y=70° Z=10°

$$X = 60 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.5 & -0.866 \\ 0 & 0.866 & 0.5 \end{bmatrix} Y = 70 \begin{bmatrix} 0.342 & 0 & 0.93 \\ 0 & 1 & 0 \\ -0.93 & 0 & 0.342 \end{bmatrix} Z = 10 \begin{bmatrix} 0.985 & -0.174 & 0 \\ 0.174 & 0.985 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$X(Y) \begin{bmatrix} 0.342 & 0 & 0.93 \\ 0.814 & 0.5 & -0.296 \\ -0.47 & 0.866 & 0.17 \end{bmatrix} \quad Z(XY) \begin{bmatrix} 0.337 & -0.060 & 0.93 \\ 0.888 & 0.350 & -0.296 \\ 0.312 & 0.935 & 0.171 \end{bmatrix}$$

X=40° Y=10° X=50°

$$X = 40 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.766 & -0.643 \\ 0 & 0.643 & 0.766 \end{bmatrix} Y = 10 \begin{bmatrix} 0.985 & 0 & 0.174 \\ 0 & 1 & 0 \\ -0.174 & 0 & 0.643 \end{bmatrix} X = 50 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.643 & 0.766 \\ 0 & 0.766 & 0.643 \end{bmatrix}$$

$$X(Y) = \begin{bmatrix} 0.985 & 0 & 0.174 \\ 0.112 & 0.766 & -0.633 \\ 0.133 & 0.647 & 0.754 \end{bmatrix} \qquad X(XY) = \begin{bmatrix} 0.985 & 0 & 0.124 \\ 0.112 & 0.766 & 0.635 \\ 0.133 & 0.643 & 0.754 \end{bmatrix}$$

X=20° Z=18° X=30°

$$X = 20 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.940 & -0.343 \\ 0 & 0.343 & 0.940 \end{bmatrix} Z = 18 \begin{bmatrix} 0.951 & -0.309 & 0 \\ 0.309 & 0.651 & 0 \\ 0 & 0 & 1 \end{bmatrix} X = 30 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.866 & -0.5 \\ 0 & 0.3 & 0.866 \end{bmatrix}$$

$$X(Z) \begin{bmatrix} 0.951 & -0.309 & 0 \\ 0.290 & 0.894 & -0.343 \\ 0.105 & 0.326 & 0.940 \end{bmatrix} \quad X(XZ) \begin{bmatrix} 0.951 & -0267 & 0.54 \\ 0.290 & 0.602 & 0.744 \\ 0.105 & 0.752 & 0.651 \end{bmatrix}$$

X=30° Z=10° Y=30°

$$X = 30 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.866 & -0.5 \\ 0 & 0.5 & 0.866 \end{bmatrix} Z = 10 \begin{bmatrix} 0.985 & -0.174 & 0 \\ 0.174 & 0.985 & 0 \\ 0 & 0 & 1 \end{bmatrix} Y = 30 \begin{bmatrix} 0.866 & 0 & 0.3 \\ 0 & 1 & 0 \\ 0.5 & 0 & 0.866 \end{bmatrix}$$

$$X(Z) \begin{bmatrix} 0.985 & -0.174 & 0 \\ 0.150 & 0.853 & -0.5 \\ 0.087 & 0.492 & 0.866 \end{bmatrix} \quad Y(XZ) \begin{bmatrix} 0.853 & -0.174 & 0.492 \\ 0.379 & 0.853 & -0.358 \\ 0.356 & 0.492 & 0.793 \end{bmatrix}$$

Y=30° Z=10° X=30°

$$Y = 30 \begin{bmatrix} 0.866 & 0 & 0.5 \\ 0 & 1 & 0 \\ -0.3 & 0 & 0.866 \end{bmatrix} \quad Z = 10 \begin{bmatrix} 0.985 & -0.174 & 0 \\ 0.174 & 0.985 & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad X = 30 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.866 & -0.5 \\ 0 & 0.5 & 0.866 \end{bmatrix}$$

$$Y(Z) \begin{bmatrix} 0.853 & -0.150 & 0.5 \\ 0.174 & 0.985 & 0 \\ 0.492 & 0.087 & 0.866 \end{bmatrix} \quad X(YZ) \begin{bmatrix} 0.855 & 0.120 & 0.508 \\ 0.174 & 0.853 & -0.162 \\ 0.492 & 0.508 & 0.706 \end{bmatrix}$$