$$\underline{x'} = H\underline{x}$$

$$\begin{bmatrix} x' \\ y' \\ 1 \end{bmatrix} = \begin{bmatrix} scos(\theta) & -ssin(\theta) & x_0scos(\theta) - y_0ssin(\theta) - x_0 \\ ssin(\theta) & scos(\theta) & x_0ssin(\theta) + y_0scos(\theta) - y_0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ 1 \end{bmatrix}$$