let A = input B = output

$$A_2' = TA_2 \qquad A_3' = TA_3 \qquad T = T(B_1 - A_1)$$

$$\vec{a} = A_2 - A_1 \qquad \vec{b} = B_2 - B_1$$

$$\alpha = \arctan\left(\frac{\vec{a}_y}{\vec{a}_x}\right) \qquad \beta = \arctan\left(\frac{\vec{b}_y}{\vec{b}_x}\right) \qquad R = R(\alpha - \beta)$$

$$A_2'' = RA_2' \qquad A_3'' = RA_3'$$

$$\vec{b}_\perp = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \vec{b} \qquad M_b = \begin{bmatrix} \vec{b}_x & \vec{b}_{\perp x} \\ \vec{b}_y & \vec{b}_{\perp y} \end{bmatrix}^{-1}$$

$$A_2^b = M_b A_2'' \qquad A_3^b = M_b A_3''$$

$$B_2^b = M_b B_2 \qquad B_3^b = M_b B_3$$

$$S_b = \frac{B_{2x}^b}{A_{2x}^b} \qquad S_\perp = \frac{B_{3y}^b}{A_{3y}^b}$$

$$S_h = \frac{B_{3x}^b - A_{3x}^b S_b}{B_{3y}^b} \qquad S = \begin{bmatrix} S_b & S_h & 0 \\ 0 & S_\perp & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Projection matrix $= P = S M_b R T$