A Default value of beta = 20° (line 86 in run.py)

In radians, beta ≈ 0,349 rad

And:

$$Q = beta^2 = 0,1218$$

$$R = \begin{bmatrix} \alpha_1 \cdot drot1^2 + \alpha_2 \cdot dtran^2 & 0 & 0 \\ 0 & \alpha_3 \cdot dtran^2 + \alpha_4 \cdot (drot1^2 + drot2^2) & 0 \\ 0 & 0 & \alpha_1 \cdot drot1^2 + \alpha_2 \cdot dtran^2 \end{bmatrix} =$$

$$= \begin{bmatrix} 10^{-4} & 0 & 0 \\ 0 & 0,25 & 0 \\ 0 & 0 & 10^{-4} \end{bmatrix}_1$$

Default values of alphas:

$\alpha_1 = 0,05$ $\alpha_3 = 0,05$

$\alpha_2 = 0,001$ $\alpha_4 = 0,01$

In line 152 each alpha is squared

$$G = \begin{bmatrix} 1 & 0 & -dtran \cdot \sin(\theta + drot1) \\ 0 & 1 & dtran \cdot \cos(\theta + drot1) \\ 0 & 0 & 1 \end{bmatrix} =$$

$$= \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 10 \\ 0 & 0 & 1 \end{bmatrix}_1$$

$$V = \begin{bmatrix} -dtran \cdot \sin(\theta + drot1) & \cos(\theta + drot1) & 0 \\ dtran \cdot \cos(\theta + drot1) & \sin(\theta + drot1) & 0 \\ 1 & 0 & 1 \end{bmatrix} =$$

$$= \begin{bmatrix} 0 & 1 & 0 \\ 10 & 0 & 0 \\ 1 & 0 & 1 \end{bmatrix}_0$$

$$H = \left[\frac{y\_pose[lm\_id] - y}{q}, -\frac{x\_pose[lm\_id] - x}{q}, -1 \right]$$

, where $q = (y\_pose[lm\_id] - y)^2 + (x\_pose[lm\_id] - x)^2$

$$H_1 = [-0{,}0016 \; ; \; 0{,}0054 \; , \; -1]$$