$$\underset{t}{\not{z}}^{(4)} = \begin{bmatrix} \overset{v}{D}_t \\ \overset{v}{\Phi}_t \end{bmatrix} = \begin{bmatrix} 1500 \\ 60 \end{bmatrix} \xrightarrow{h^{-1}(\cdot)} \text{Add a new landmark at } (760, -1299.038)$$

$$\Sigma_4 = \begin{bmatrix} 125659.427 & +49455.493 \\ +49455.493 & 68553.142 \end{bmatrix} = \underbrace{\begin{bmatrix} -0.5 & 0.866 \\ 0.866 & 0.5 \end{bmatrix}}_{V_{\parallel} \quad V_{\perp}} \begin{bmatrix} (200)^2 & 0 \\ 0 & (392.699)^2 \end{bmatrix} (V_{\parallel} \; V_{\perp})^T$$

$$\alpha_{\parallel} = \text{atan}\left(\frac{V_{\parallel y}}{V_{\parallel x}}\right) = \text{atan}\left(\frac{0.866}{-0.5}\right) = -60 \longrightarrow \lambda_{\parallel} = 200$$

$$\alpha_{\perp} = \text{atan}\left(\frac{V_{\perp y}}{V_{\perp x}}\right) = \text{atan}\left(\frac{0.5}{0.866}\right) = 30 \longrightarrow \lambda_{\perp} = 392,699$$

$\lambda_{\perp} \propto \overset{v}{D}_t$

Therefore,

$\overset{v}{D}_t \uparrow \Rightarrow \lambda_{\perp} \uparrow$