$$= \frac{V_y n_x \bar{x} + V_x n_y \bar{y}}{V_y n_x + V_x n_y}$$

∴

$$\lambda_n = n_x \lambda_x + n_y \lambda_y$$

$$\Rightarrow \frac{1}{V_n} = \frac{n_x}{V_x} + \frac{n_y}{V_y}$$

$$V_n = \frac{V_x V_y}{n_x V_y + n_y V_x}$$

∴ this is the variance.

2. The sensor fusion using the two sensor data is performed with the variances. The posterior mean is the weighted average of the prior mean and the sample average of the two sensors.

In addition, the posterior precision is the sum of prior precision with the weighted precision of the sensors and as it is clear the variance is the inverse of the precision. Therefore from the above equation we can say that the posterior variance decreases with the number of measurements taken n_1, n_2 and it is lower than the original variances V_1, V_2.