

Specific Values:

Camera Matrix for Camera 1 (M):

Since Camera 1 is located at world coordinates $(0, 0, 0)$ and points down the positive z -axis with unit

focal length, its camera matrix is a 3×4 matrix with the form: $M = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$

Noise Covariance (Σ):

The noise covariance in the image plane is given as $(0.05)^2 \cdot I_{2 \times 2}$, so: $\Sigma = \begin{bmatrix} 0.0025 & 0 \\ 0 & 0.0025 \end{bmatrix}$

Prior Parameters (μ_ℓ and Σ_ℓ):

The prior mean is $\mu_\ell = [0, 0, 6]^T$.

The prior covariance is $\Sigma_\ell = 6 \cdot I_{3 \times 3}$, so: $\Sigma_\ell = \begin{bmatrix} 6 & 0 & 0 \\ 0 & 6 & 0 \\ 0 & 0 & 6 \end{bmatrix}$