Errata

Errata of the paper:
E. Oyama and S. Tachi, "Coordinate Transformation Learning of Hand Position Feedback Controller by Using Change of Position Error Norm" in *Advances in Neural Information Processing Systems 11*, MIT Press, pp.1038-1044, 1999

Section 3.1, p.1041(p.4),
Equation (13) and (14),

$$\begin{aligned}\boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e}) &\approx \alpha(\frac{\alpha}{2}\boldsymbol{R}_\theta \boldsymbol{J}^T(\boldsymbol{\theta})\boldsymbol{J}(\boldsymbol{\theta})+\boldsymbol{I})^{-1}\boldsymbol{R}_\theta \boldsymbol{J}^T(\boldsymbol{\theta})\boldsymbol{e} \qquad (13)\\ \boldsymbol{R}_\theta &= E[\boldsymbol{\Delta\theta}\boldsymbol{\Delta\theta}^T|\boldsymbol{\theta},\boldsymbol{e}] \qquad (14)\end{aligned}$$

should be

$$\begin{aligned}\boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e}) &\approx \alpha(\frac{\alpha}{2}\boldsymbol{R}_\alpha+\boldsymbol{I}_m)^{-1}\boldsymbol{R}_\theta \boldsymbol{J}^T\boldsymbol{e} \qquad (13)\\ \boldsymbol{R}_\alpha &= (\boldsymbol{R}_\theta+\boldsymbol{R}_{nfb})\boldsymbol{J}^T\boldsymbol{J}+r_{Jnfb}\boldsymbol{I}_m \qquad (14)\\ \boldsymbol{R}_\theta &= E[\boldsymbol{\Delta\theta}\boldsymbol{\Delta\theta}^T|\boldsymbol{\theta},\boldsymbol{e}]\\ \boldsymbol{R}_{nfb} &= E[\boldsymbol{\Delta\theta}_{nfb}\boldsymbol{\Delta\theta}_{nfb}^T|\boldsymbol{\theta},\boldsymbol{e}]\\ r_{Jnfb} &= E[|\boldsymbol{J}\boldsymbol{\Delta\theta}_{nfb}|^2|\boldsymbol{\theta},\boldsymbol{e}]\\ \boldsymbol{\Delta\theta}_{nfb} &= \boldsymbol{\Delta\theta}-\boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e})\end{aligned}$$

Section 3.1, p.1041(p.4),

When $\boldsymbol{d}(k)$ is a non-zero vector, $\boldsymbol{R}_\theta$ is a positive definite symmetric matrix and $(\frac{\alpha}{2}\boldsymbol{R}_\theta\boldsymbol{J}^T\boldsymbol{J}+\boldsymbol{I})^{-1}$ is a positive definite matrix.

should be

When $\boldsymbol{d}(k)$ is a non-zero vector, $\boldsymbol{R}_\theta$ is a positive definite symmetric matrix and $(\frac{\alpha}{2}\boldsymbol{R}_\alpha+\boldsymbol{I})^{-1}$ is a positive definite matrix.

Section 3.2, p.1042(p.5),
Equation (19),

$$\begin{aligned} E[\Delta S \boldsymbol{\Delta\theta}|\boldsymbol{\theta},\boldsymbol{e}] &\approx -\boldsymbol{R}_\theta \boldsymbol{J}^T\boldsymbol{e} + \frac{1}{2}\boldsymbol{R}_\theta \boldsymbol{J}^T\boldsymbol{J}\boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e}) \\ &+ \frac{1}{2}E[\boldsymbol{\Delta\theta}\boldsymbol{\Delta\theta}^T\boldsymbol{J}^T\boldsymbol{J}\boldsymbol{\Delta\theta}_{nfb}|\boldsymbol{\theta},\boldsymbol{e}] \end{aligned} \tag{19}$$

should be

$$\begin{aligned} E[\Delta S \boldsymbol{\Delta\theta}|\boldsymbol{\theta},\boldsymbol{e}] &\approx -\boldsymbol{R}_\theta \boldsymbol{J}^T\boldsymbol{e} + \frac{1}{2}\boldsymbol{R}_\alpha \boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e}) \\ &+ \frac{1}{2}\boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e})\boldsymbol{\Phi}_{fb}^T(\boldsymbol{\theta},\boldsymbol{e})\boldsymbol{J}^T\boldsymbol{J}E[\boldsymbol{\Delta\theta}_{nfb}|\boldsymbol{\theta},\boldsymbol{e}] \\ &+ \frac{1}{2}E[|\boldsymbol{J}\boldsymbol{\Delta\theta}_{nfb}|^2\boldsymbol{\Delta\theta}_{nfb}|\boldsymbol{\theta},\boldsymbol{e}] \end{aligned} \tag{19}$$

Section 3.2, p.1042(p.5),
Equation (20),

$$E[\boldsymbol{\Delta\theta}\boldsymbol{\Delta\theta}^T\boldsymbol{J}^T\boldsymbol{J}\boldsymbol{\Delta\theta}_{nfb}|\boldsymbol{\theta},\boldsymbol{e}] = \boldsymbol{0} \tag{20}$$

should be

$$E[\boldsymbol{\Delta\theta}_{nfb}|\boldsymbol{\theta},\boldsymbol{e}] = E[|\boldsymbol{J}\boldsymbol{\Delta\theta}_{nfb}|^2\boldsymbol{\Delta\theta}_{nfb}|\boldsymbol{\theta},\boldsymbol{e}] = \boldsymbol{0} \tag{20}$$

Section 3.2, p.1042 (p.5) ,
Equation (21),

$$E[\boldsymbol{\Delta\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e})|\boldsymbol{\theta},\boldsymbol{e}] \approx \alpha\boldsymbol{R}_\theta\boldsymbol{J}^T\boldsymbol{e} - (\frac{\alpha}{2}\boldsymbol{R}_\theta\boldsymbol{J}^T\boldsymbol{J} + \boldsymbol{I})\boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e}) \tag{21}$$

should be

$$E[\boldsymbol{\Delta\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e})|\boldsymbol{\theta},\boldsymbol{e}] \approx \alpha\boldsymbol{R}_\theta\boldsymbol{J}^T\boldsymbol{e} - (\frac{\alpha}{2}\boldsymbol{R}_\alpha + \boldsymbol{I})\boldsymbol{\Phi}_{fb}(\boldsymbol{\theta},\boldsymbol{e}) \tag{21}$$