Wednesday, April 2, 2025 12:40 PM

Improvements

- So far we have used $J(\vec{\theta}^* | \vec{\theta}^{\ell-1}) = N(\vec{\theta}^{\ell-1}; \underset{\sim}{D})$

where $\underset{\sim}{D} = \underset{\sim}{I}_P \cdot \vec{\zeta}_\theta$ $\Rightarrow$ No cross-covariance

- Can we use a new covariance, $\underset{\sim}{V}$, that better suits J?

Ex) If we have a good initial estimate $\vec{\theta}^0$, then

$$\Rightarrow \quad \underset{\sim}{V} = \sigma_\varepsilon^2 \left(\underset{\sim}{S}^T \underset{\sim}{S} \right)^{-1} \Big|_{\vec{\theta}^0} = \sigma^2 \left(\mathcal{F}(\vec{\theta}^0) \right)^{-1}$$

where $\sigma_\varepsilon^2 = \dfrac{1}{N_y - P} \displaystyle\sum_{i=1}^{N_y} \left(y_i - f(x_i ; \vec{\theta}^0) \right)^2$