$$x_i = A + Bi + w_i \qquad f(x_i) = \frac{1}{\sqrt{2\pi\sigma_i^2}} e^{-\frac{(x-(A+Bi))^2}{2\sigma_i^2}}$$

$$l = \sum_{i=1}^{N} -\frac{1}{2}\ln(2\pi\sigma_i^2) - \frac{(x-A-Bi)^2}{2\sigma_i^2} \qquad \sigma_i^2 = \sigma^2$$

$$\frac{\partial l}{\partial A} = \sum_{i=1}^{N} 2\,\frac{x-A-Bi}{2\sigma^2} = \sum_{i=1}^{N}\frac{x-A-Bi}{\sigma^2} = \frac{1}{\sigma^2}\left[Nx - NA - \frac{N(N+1)}{2}B\right]$$

$$\frac{\partial l}{\partial B} = \sum_{i=1}^{N} i\,\frac{x-A-Bi}{\sigma^2} = \frac{1}{\sigma^2}\left[\frac{N(N+1)}{2}x - \frac{N(N+1)}{2}A - \frac{n(n+1)(2n+1)}{6}B\right]$$

$$H^T H = \begin{pmatrix} 1 \dots 1 \\ 1 \dots N \end{pmatrix}\begin{pmatrix} 1 & 1 \\ \vdots & \vdots \\ 1 & N \end{pmatrix} = \begin{pmatrix} N & \frac{N(N+1)}{2} \\ \frac{N(N+1)}{2} & \frac{n(n+1)(2n+1)}{6} \end{pmatrix}$$

$$\begin{pmatrix} \frac{\partial l}{\partial A} \\ \frac{\partial l}{\partial B} \end{pmatrix} = \frac{1}{\sigma^2}\left[H^T x - H^T H \begin{pmatrix} A \\ B \end{pmatrix}\right] \Rightarrow \begin{pmatrix} \hat{A} \\ \hat{B} \end{pmatrix} = (H^T H)^{-1} H^T x$$

SLIDE 42: ODHADY PAR. LIN. MODELU

více příkladů

použití jiných čh

než $X \sim N$

přidat více externích materiálů