SLMP Errata

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1 Linear Algebra

1. P6 L2-:
$$\begin{bmatrix} 0 & a_2 - a_1 & \dots & a_2^{k-2} - a_1^{k-2} & a_2^{k-1} - a_1^{k-1} \end{bmatrix}$$
2. P6 L3:
$$\begin{vmatrix} 1 & 0 & \dots & 0 & 0 \\ 0 & a_2 - a_1 & \dots & (a_2 - a_1)\, a_2^{k-3} & (a_2 - a_1)\, a_2^{k-2} \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & a_k - a_1 & \dots & (a_k - a_1)\, a_k^{k-3} & (a_k - a_1)\, a_2^{k-2} \end{vmatrix}$$
3. P10 Example 13: the matrix A in Example 8 $\rightarrow$ the matrix A below
4. P13 L8: $u_1 = \frac{1}{\|v_1\|} v_1 \rightarrow u_1 = \frac{v_1}{\|v_1\|}$
5. P14 L4: symmetric because $\rightarrow$ symmetric because when A is symmetric
6. P14 Example 18: The eigenspaces of $\rightarrow$ The eigenspaces of $A =$
7. P16 L10: $b_{r+1}, \dots, b_n \rightarrow b_1, \dots, b_n$
8. P16 L17: Proposition (1.6) $\rightarrow$ Proposition 4

2 LINEAR REGRESION

1. P26 L12-,L13-:
$$\begin{aligned} &= E(\hat{\beta} - \beta)(\hat{\beta} - \beta)^T = E\left\{ \left(X^T X\right)^{-1} X^T \epsilon \right\} \left\{ \left(X^T X\right)^{-1} X^T \epsilon \right\}^T \\ &= \left(X^T X\right)^{-1} X^T \left(E\epsilon\epsilon^T\right) X \left(X^T X\right)^{-1} = \sigma^2 \left(X^T X\right)^{-1} \end{aligned}$$
2. P27 L3-: $[v_1, \dots, v_{N-p-1}, v_{N-p}, \dots, v_n] \rightarrow [v_1, \dots, v_{N-p-1}, v_{N-p}, \dots, v_N]$
3. P29 Section Title: $\hat{\beta}_j = 0 \rightarrow \beta_j = 0$
4. P43 L11, L13: Proposition 4 $\rightarrow$ Proposition 3

3 ClASSIFICATION

1. P55 L4: $x > -\beta_0/\beta \to x > -\beta_0/\beta$ for $\beta > 0$
2. P60 L1: below: $\mathbb{R}^p \times \mathbb{R} \to \mathbb{R}^p \times \{-1, 1\}$
3. P61 L10-: $\det \Sigma \to \Sigma_{\pm}$
4. P62 L7-: $\pi_1 = \pi_{-1} \to \pi_1 = \pi_{-1}, p = 1$
5. P65 L11: $\{1, \ldots, n\} \to \{1, \ldots, N\}$
6. P65 L17: $S = \{2\} \to S = \{1\}$.

4 RESAMPLING

1. P82 L14: $i \notin S \to i \in S$
2. P86 1-: $\alpha = \frac{V(Y)-v(Y)}{V(X)+V(Y)-2Cov(X,Y)} \to \alpha = \dfrac{V(Y) - Cov(X,Y)}{V(X) + V(Y) - 2Cov(X,Y)}$
3. P87 7: $\hat{\alpha} = \dfrac{v_x^2 - v_y^2}{v_x^2 + v_y^2 - 2c_{x,y}} \to \hat{\alpha} = \dfrac{v_y^2 - c_{xy}}{v_x^2 + v_y^2 - 2c_{x,y}}$
4. P87 13: `return -np.var(X, ddof=1)` → `return -np.cov(X, Y)`
5. P90 Exercise 33(b): $\hat{y}_S = X_S \hat{\beta}_S \to \hat{y}_S = X_S \hat{\beta}_{-S}$

5 Information Criteria

1. P98 L1,L2: `S.min` → `S_min`
2. P101 (5.3)(5.4) (six): $x \to X$
3. P89 Example 47: $\mathbb{E}[\nabla l)(\nabla l)^\top] \to \mathbb{E}[(\nabla l)(\nabla l)^\top]$
4. P102 Proposition 17: Any covariance → Suppose J is nonsingular. Any covariance
5. P104 Proposition 18: the likelihood → the negated likelihood
6. P106 L11-: $\frac{N}{2} \log 2\pi\sigma^2 + \frac{1}{2}(p+1) \to \frac{N}{2} \log 2\pi\sigma^2 e + \frac{1}{2}(p+1)$
7. P109 L7, L9 (one each): $(n-1)$-th → $(n-j)$-th

6 Regularization

1. P116 L3: $X^\top X + \lambda I. \to X^\top X + N\lambda I.$
2. P117 In the last lines the table and Figure 6.1 of in Example 48: 18-24 year old in college → people 25 years + in college
3. P125 Figure 6.6: $x, y \to \beta_1, \beta_2$ (The axes for the both figures).

7 Non-Linear Regression

1. P137 L10-: for each $i = 1, 2, \ldots, K+1 \rightarrow$ for each $i = 1, 2, \ldots, K$
2. P145 L1,L4: $\lambda \int_{-\infty}^{\infty} \{g''(x)\}^2 dx \rightarrow \lambda \int_{-\infty}^{\infty} f''(x)\}^2 dx$, $L(g) \rightarrow L(f)$
3. P148 L6-: $K \in \mathcal{X}^{n \times n} \rightarrow K \in \mathbb{R}^{n \times n}$
4. P149 L3-: $K(x, x_i)$,$K(x, x_j) \rightarrow k(x, x_i)$,$k(x, x_j)$
5. P150 L2: $K(x_*, x_1)$,$K(x_*, x_j)$,$K(x_*, x_N) \rightarrow k(x_*, x_1)$,$k(x_*, x_j)$,$k(x_*, x_N)$
6. P137 L8-: fourth $\rightarrow$ fofth
7. Exercise 67: $y_i - \beta(x)^T [1, x_i] \rightarrow y_i - [1, x_i]\beta(x)$

8 Decision Trees

1. P172 L8-: $x \in R_j \rightarrow x_i \in R_j$.
2. P173 L10-: $\{x_k \mid x_k < x_{i,j}\}$, $\{x_k \mid x_k \geq x_{i,j}\} \rightarrow \{x_k \mid x_{k,j} < x_{i,j}\}$ and $\{x_k \mid x_{k,j} \geq x_{i,j}\}$.
3. P173 L6-: $\left(y_i - \bar{y}_{i,j}^L\right)^2$, $\left(y_i - \bar{y}_{i,j}^R\right)^2 \rightarrow \left(y_k - \bar{y}_{k,j}^L\right)^2$, $\left(y_k - \bar{y}_{k,j}^R\right)^2$
4. P181 L3: Remove $\bar{y}_j$