ERRATUM TO:

Realtime Data Mining

Self-Learning Techniques for Recommendation Engines

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Corrections

Explanation

The errors are marked in the following form:

- P<page> (L<line> or reference): error → correction ([Author's error])

Remarks:

1. Line: line contains the line number, negative numbers are counted from the button of the page; the line number may slightly differ based on the counting method but are clear from the context
2. Error and correction are mostly in quotation marks, except for formulas
3. Sometimes after error → correction, "i.e." followed by a description is included to make the error correction easier
4. [Author's error] indicates errors in the original manuscript oft the authors

Summary of Notation

- Pxxii L14: $s' \in S\overline{a} \rightarrow s' \in S_{\overline{a}},$ i.e. lower subscript

Chapter 1

Chapter 2

Chapter 3

- P15 L3 of Abstract: "value factions" → "value functions"
- P26 L-7: add dot at the end of sentence
- P26 L-5: add dot at the end of sentence
- P32 L-10: "A node is" → "A node w is" [Author's error]
- P33 L19: "$p_{55} = 0, 5 > 0$" → "$p_{55} = 0.5 > 0$" [in part Author's error]
- P36 Proposition 3.1: shall be written cursive like other Propositions
- P36 L-5: "question of Sect. 3.4" → "question of Sect. 3.6" [Author's error]
- P37 Algorithm 3.1: indent code block of lines 5.-7.
- P38 Algorithm 3.2: line 12: insert space before "arbitrarily"
- P38 Algorithm 3.3: line 1: insert space before "arbitrarily"
- P39, Theorem 3.2: in assumption 3 add dot after $\lambda \in [0,1]$

Chapter 4

- P43 L6: "(Fig. 4.2):" → "(Fig. 4.2)."
- P46 L-12: $\overline{p}_1 = p_1 = p_1(1-p_2) + p_1 p_2 \rightarrow \overline{p}_1 = p_1(1-p_2) + p_1 p_2$ [Author's error]
- P48 Equation (4.4): add dot after the equation
- P54 L5: "(Sect. 12.3.1)" → "(Sect. 12.3)" (already reported before)
- P54 L17: "386 AC17893" → "386AC17893", i.e. remove space before "A"

Chapter 5

- P58 L7: "Approach 1" → "Approach I" [Author's error]
- P66 L7: add dot at the end of sentence, i.e. after "same q^0 action value".
- P67 Equation (5.9):

$$q^{\pi}(s,a) = p^a_{ss_a}\left[p^a_{ss_a} + \gamma \sum_{a'} \pi(s_a,a') q^{\pi}(s_a,a')\right] + c(s,a) \sum_{s' \neq s_a} p^a_{ss'}\left[r^a_{ss'} + \gamma \sum_{a'} \pi(s',a') q^{\pi}(s',a')\right]$$

$$\rightarrow$$

$$q^{\pi}(s,a) = p^a_{ss_a}\left[r^a_{ss_a} + \gamma \sum_{a'} \pi(s_a,a') q^{\pi}(s_a,a')\right] + c(s,a) \sum_{s' \neq s_a} p^a_{ss'}\left[r^a_{ss'} + \gamma \sum_{a'} \pi(s',a') q^{\pi}(s',a')\right]$$

  i.e. replace $p^a_{ss_a}$ by $r^a_{ss_a}$ in first term [Author's error]
- P68 Equation (5.12): replace dot by comma
- P69 Algorithm 5.1: line 2: $\mathbf{F}^j p_{ss_a} \rightarrow \mathbf{F}_{j_{p_{ss_a}}}$, i.e. ${}^j\mathbf{p}^a := \mathbf{F}_{j_{p_{ss_a}}}\left({}^j\mathbf{p}^{[a]}\right)$
- P69 Algorithm 5.1: line 4:

$$\mathbf{F}^j p_{ss_a} - 1 \rightarrow \mathbf{F}^{-1}_{j_{p_{ss_a}}} \text{ and } {}^{j+1}\mathbf{p} \rightarrow {}^{j+1}\mathbf{p}^a, \text{ i.e. } {}^{j+1}\mathbf{p}^{[a]} := \mathbf{F}^{-1}_{j_{p_{ss_a}}}\left({}^{j+1}\mathbf{p}^a\right)$$

- P72 L9: $c(s, a) \rightarrow c(s,a)$, i.e. remove space before a
- P73 L-2: "probability of the issued" → "probabilities of the issued" [Author's error]
- P75 Algorithm 5.4: remove indent in line 8, i.e. ${}^{j+1}\prod_{\overline{a}} := {}^{j}\prod_{\overline{a}}$ starts at same position as lines 7 and 9
- P76 L16: "Comparison of Linear and Nonlinear Approaches" shall be treated as a headline, i.e. add blank lines before and after

- P80 L2: add dot after "furniture shop"
- P80 L2: "off-line"→"offline"
- P85 L14: "but the complete $p^{a}_{ss'}$ which"→"but the complete $p^{\overline{a}}_{ss'}$ which", i.e. replace $p^{a}_{ss'}$ by $p^{\overline{a}}_{ss'}$ [Author's error]
- P88 L1-2: $P^c := \left\{p^{a_{s'}}_{ss'}\right\} s \in S, s' \in A(s) \rightarrow P^c := \left\{p^{a_{s'}}_{ss'}\right\}_{s\in S, s'\in \mathrm{A}(s)}$, i.e. lower subscript
- P88 L-8: *m-1* → *m*-1, i.e. "1" not cursive [Author's error]
- P90 L8: "probabilities $p^{a}_{ss'}$ was performed by Algorithm 5.3" → "probabilities $p^{\overline{a}}_{ss'}$ was performed by Algorithm 5.3", i.e. replace $p^{a}_{ss'}$ by $p^{\overline{a}}_{ss'}$ [Author's error]

Chapter 6

- P95 L2: "multi-scales bases localize" → "multi-scale bases localize" [Author's error]
- P96 L5: "Fedorenko [Fed64] and Bakhvalov [Bakh66]" → "Radii Fedorenko [Fed64] and Nikolai Bakhvalov [Bakh66]", i.e. add first names [Author's error]
- P97 Algorithm 6.1: in Output line: "von (6.3)" → "of (6.3)"
- P99 L-5: $q(s, a)$ → $q(s,a)$, i.e. remove space before a
- P100 L20: "real $N\times N$ matrix" →"real $n\times n$ matrix"
- P100 Equation (6.5): remove dot
- P101 L8: "entry in of a vector" → "entry of a vector" [Author's error]
- P104 L-5: G_β, $\beta = 1, \ldots, m$ → G_β, $\beta = 1,\ldots, m$, i.e. move space before "..." behind [Author's error]
- P107 Algorithm 6.2: line 7: "return"→"**return**", i.e. boldface [Author's error]
- P108 L6: "Proof"→"*Proof*", i.e. cursive
- P112 Algorithm 6.3: lines 3–11 should start at same position as lines 2 and 12
- P113 L6: "an spd $N \times N$-matrix"→"an spd $N\times N$-matrix", i.e. remove spaces around "×"
- P114 L1: "of Example 6.1"→"of Example 6.2" [Author's error]
- P117 L10: "resolution$^{N}_{j=1}$. "→"resolution.", i.e. remove formula part

Chapter 7

- P120 L13: "This may be user-centric" → "These may be user-centric" [Author's error]
- P124 Equation (7.4): replace first ouccurence of "," by "−", i.e.

$$R(f_N) = \tfrac{1}{M}\sum_{i=1}^{M}\left(f_N(\mathbf{X}_i) - y_i\right)^2 + \lambda\|Pf_N\|^2_{L_2}$$ [Author's error]

- P124 Equation (7.6):

$$\sum_{j=1}^{N}\alpha_j\left[M\lambda\left(P\varphi_j,P\varphi_k\right)_{L_2}+\sum_{i=1}^{M}y_i\varphi_j(\mathbf{x}_i)\cdot\varphi_k(\mathbf{x}_i)\right]=\sum_{i=1}^{M}y_i\varphi_k(\mathbf{x}_i)\rightarrow$$
$$\sum_{j=1}^{N}\alpha_j\left[M\lambda\left(P\varphi_j,P\varphi_k\right)_{L_2}+\sum_{i=1}^{M}\varphi_j(\mathbf{x}_i)\cdot\varphi_k(\mathbf{x}_i)\right]=\sum_{i=1}^{M}y_i\varphi_k(\mathbf{x}_i)$$

  remove y_i from term $\sum_{i=1}^{M}y_i\varphi_j(\mathbf{x}_i)\cdot\varphi_k(\mathbf{x}_i)$[Author's error]
- P125 L10: "where C corresponds to" → "where P corresponds to" [Author's error]
- P125 L-15: $\mathbf{x}_i=[0,1]^d\rightarrow\mathbf{x}_i\in\Omega=[0,1]^d$ [Author's error]
- P126 L1: in equation "$M.$ " → "$M\cdot$ ", i.e. dot not lowered
- P126 L2: in equation " j_1 " → " j_t ", i.e. t instead of 1
- P126 L4: $j_t=0,\ldots,2^{l_t}\rightarrow j_t=0,\ldots,2^n$, i.e. replace 2^{l_t} by 2^n [Author's error]
- P126 L4: $(\alpha_n)_j\rightarrow(\alpha_n)_{\mathbf{j}}$, i.e. bold index "j"
- P126 L6: in equation $V_n:=\text{span}\{\phi_{n,\mathbf{j}},\ j_t=0,\ldots,2^d,\ t=1,\ldots,d\}$: "$2^d$" → "$2^n$" [Author's error]
- P127 L4: $h_1:=\left(j_{l_1},\ldots,j_{l_d}\right):=\left(2^{-l_1},\ldots,2^{-l_d}\right)\rightarrow h_1:=(h_{l_1},\ldots,h_{l_d}):=\left(2^{-l_1},\ldots,2^{-l_d}\right)$, i.e. replace $j_{l_1},\ldots,j_{l_d}$ by $h_{l_1},\ldots,h_{l_d}$ [Author's error]
- P127 Equation (7.10): $x_{l,j}:=\left(x_{\mathbf{l}_1,\mathbf{j}},\ldots,x_{l_d}\right)\rightarrow x_{\mathbf{l},\mathbf{j}}:=\left(x_{l_1,j_1},\ldots,x_{l_d,j_d}\right)$ [Author's error]
- P127 L9: $h_{\mathbf{1}}:=(h_{l_1},\ldots,h_{l_d}):=\left(2^{-l_1},\ldots,2^{-l_d}\right)\rightarrow x_{l_t,j_t}:=j_t\cdot h_{l_t}=j_t\cdot 2^{-l_t}$, $j_t=0,\ldots,2^{l_t}$ [Author's error]
- P127 L9: $V_{\mathbf{1}}\rightarrow V_{\mathbf{l}}$, i.e. replace bold "1" by bold "l"
- P127 Equation (7.11): in equation $V_l\rightarrow V_{\mathbf{l}}$, i.e. replace "l" by bold "l" [Author's error]
- P127 Equation (7.11): in equation $\phi_{1,\mathbf{j}}\rightarrow\phi_{\mathbf{l},\mathbf{j}}$, i.e. replace bold "1" by bold "l" (as in "leverage")
- P127 Equation (7.12): in equation $\phi_{1,\mathbf{j}}\rightarrow\phi_{\mathbf{l},\mathbf{j}}$, i.e. replace bold "1" by bold "l"
- P127 L14: $\phi_{l_t,j_t}(x_i)\rightarrow\phi_{l_t,j_t}\left(x_j\right)$, i.e. replace x_i by x_j
- P127 L-5: $\phi_{1,\mathrm{j}}(\mathbf{x})\rightarrow\phi_{\mathbf{l},\mathbf{j}}(\mathbf{x})$, i.e. replace bold "1" by bold "l"
- P127 Equation (7.15): replace bold "1" by bold "l" in all of three subscripts
- P127 L-2: $e_{\mathbf{1}}\rightarrow e_{\mathbf{l}}$, i.e. replace bold "1" by bold "l"
- P127 L-1: $V_{\mathbf{1}}=0\rightarrow V_{\mathbf{l}}=0$, i.e. replace bold "1" by bold "l"
- P127 L-1: $W_{\mathbf{1}}\rightarrow W_{\mathbf{l}}$, i.e. replace bold "1" by bold "l"
- P128 L1: $V_{\mathbf{1}}\rightarrow V_{\mathbf{l}}$, i.e. replace bold "1" by bold "l"
- P128 L1: $V_{\mathbf{1}-e_t}\rightarrow V_{\mathbf{l}-e_t}$, i.e. replace bold "1" by bold "l"
- P128 Equation (7.16): in equation $|1|_\infty\rightarrow|\mathbf{l}|_\infty$, i.e. replace "1" by bold "l"
- P128 Equation (7.16): in equation $W_1\rightarrow W_{\mathbf{l}}$, i.e. replace "1" by bold "l"
- P128 L8: $\mathbf{I}_1\rightarrow\mathbf{I}_{\mathbf{l}}$, i.e. replace "1" by bold "l"

- P128 Equation (7.17): in equation $\mathbf{I}_1 \rightarrow \mathbf{I_l}$, i.e. replace "1" by bold "l"
- P128 Equation (7.18): in equation $\phi_{\mathbf{1,j}} \rightarrow \phi_{\mathbf{l,j}}$, i.e. replace bold "1" by bold "l"
- P128 Equation (7.18): in equation $\mathbf{I}_1 \rightarrow \mathbf{I_l}$, i.e. replace "1" by bold "l"
- P128 Equation (7.19): in equation $\phi_{1,\mathbf{j}} \rightarrow \phi_{\mathbf{l,j}}$, i.e. replace bold "1" by bold "l"
- P128 Equation (7.19): in equation $\mathbf{I}_1 \rightarrow \mathbf{I_l}$, i.e. replace "1" by bold "l"
- P128 L-10: $\phi_{\mathbf{1,j}}(\mathbf{x}) \rightarrow \phi_{\mathbf{l,j}}(\mathbf{x})$, i.e. replace bold "1" by bold "l"
- P128 L-10: $W_{\mathbf{1}} \rightarrow W_{\mathbf{l}}$, i.e. replace bold "1" by bold "l"
- P128 Equation (7.20): replace all bold "1" by bold "l" (9 times)
- P128 L-6: $\alpha_{\mathbf{1,j}} \in \Re \rightarrow \alpha_{\mathbf{l,j}} \in \Re$, i.e. replace bold "1" by bold "l"
- P128 Equation (7.21): in equation $W_{\mathbf{1}} \rightarrow W_{\mathbf{l}}$, i.e. replace bold "1" by bold "l"
- P129 Equation (7.22): in equation $\mathbf{I}_1 \rightarrow \mathbf{I_l}$, i.e. replace "1" by bold "l"
- P129 Equation (7.22): in equation add " = ", i.e.

$$f_n^{(s)}(\mathbf{x}) = \sum_{|\mathbf{l}|_1 \leq n+d-1} \sum_{\mathbf{j} \in \mathbf{I_l}} \alpha_{\mathbf{l,j}} \phi_{\mathbf{l,j}}(\mathbf{x})$$

- P130 L4: in equation $\mathbf{I}_1 \rightarrow \mathbf{I_l}$, i.e. replace "1" by bold "l"
- P130 L9: in both equations replace all bold "1" by bold "l" (4 times)
- P130 L10: $\mathbf{j} \in \mathbf{I}_1 \rightarrow \mathbf{j} \in \mathbf{I_l}$, i.e. replace "1" by bold "l"
- P130 L10: before $\mathbf{k} \in \mathbf{I}_{\mathrm{r}}$: "." → ","
- P131 L2: $\Omega_1 \rightarrow \Omega_{\mathbf{l}}$, i.e. replace "1" by bold "l"
- P131 L4: $\Omega_1 \rightarrow \Omega_{\mathbf{l}}$, i.e. replace "1" by bold "l"
- P132 Equation (7.27): $f_1 \rightarrow f_{\mathbf{l}}$, i.e. replace "1" by bold "l"
- P132 L-5: $\Omega_1 \rightarrow \Omega_{\mathbf{l}}$, i.e. replace "1" by bold "l"
- P133 Algorithm 7.1 L10: $B_1^T \rightarrow B_{\mathbf{l}}^T$, i.e. replace normal-"l" by bold-"l"
- P134 L-12: $\alpha_{\mathbf{I}} \rightarrow \alpha_{\mathbf{l}}$, i.e., replace bold-"I" (capital-"eye") by bold-"l" (lower-case-"l" as in "leverage")
- P134 L-3: $C_{\mathbf{I}}^{'} \rightarrow C_{\mathbf{l}}^{'}$, i.e., replace bold-"I" (capital-"eye") by bold-"l" (lower-case-"l" as in "leverage") and remove spacing before subscript
- P135 L12: $B_1^T \rightarrow B_{\mathbf{l}}^T$, i.e. replace "1" by bold "l"
- P135 L13: $B_1^T \rightarrow B_{\mathbf{l}}^T$, i.e. replace "1" by bold "l"
- P135 L17: $h_1 \rightarrow h_{\mathbf{l}}$, i.e. replace bold-"1" by bold "l"
- P135 L17: $B_1 \rightarrow B_{\mathbf{l}}$, i.e. replace bold-"1" by bold "l"
- P135 L17: $\overline{h}_1 \rightarrow h_{\mathbf{l}}$, i.e. replace bold-"1" by bold "l"

Chapter 8

- P176 L11 (isolated unnumbered formula): replace first occurrence of lower-case-"x" by capital-"X", i.e., $a := x^T y = (x_i^T y)_{i \in \{1,\ldots,m\}} \rightarrow a := X^T y = (x_i^T y)_{i \in \{1,\ldots,m\}}$

- P177 L11 (eq. 8.38): mind case differences in the subscript below "min"

$$\min_{C_1,\ldots,C_k,C,\ldots,C_k} \sum_{l=1}^{k} \sum_{i \in C_l} ||x_i - c_l||_2^2 \rightarrow \min_{C_1,\ldots,C_k,c_1,\ldots,c_k} \sum_{l=1}^{k} \sum_{i \in C_l} ||x_i - c_l||_2^2$$

- P177, eq. 8.39:

$$\min_{C \in \mathbb{R}^{r \times k}, B \in \mathbb{R}^{m \times k}} \left\| X - CB^T \right\|_F^2 \; s \cdot t \cdot b_{ij} \in \{0,1\},$$
$$\sum_{s=1}^{k} b_{is} = 1 \forall i \in \forall \{1,\ldots,m\}, j \in \{1,\ldots,k\}.$$
$$\rightarrow$$
$$\min_{C \in \mathbb{R}^{r \times k}, B \in \mathbb{R}^{m \times k}} \left\| X - CB^T \right\|_F^2 \; s.t. \; b_{ij} \in \{0,1\},$$
$$\sum_{s=1}^{k} b_{is} = 1 \forall i \in \forall \{1,\ldots,m\}, j \in \{1,\ldots,k\}.$$

Chapter 9

- P183, §1 L2, last but one word: thought → though [Author's error]
- P188, Algorithm 9.1, line with label 4:

$$C := A \times {}_1U_1 \times {}_{2\ldots} \times {}_dU_d^T \rightarrow C := A \times_1 U_1^T \times_{2\ldots} \times_d U_d^t$$

- P191, isolated formula in the first paragraph below section title:

$$\tilde{a}_{\mathbf{i}} = \begin{cases} a_{\mathbf{i}}, & \mathbf{i} \leq \mathbf{n} - \mathbf{e}_d \\ b_{\mathbf{i}^{(d)}}, & \mathbf{i}_d = n_d \end{cases} \rightarrow \tilde{a}_{\mathbf{i}} = \begin{cases} a_{\mathbf{i}}, \mathbf{i} \leq \mathbf{n} - \mathbf{e}_d \\ b_{\mathbf{i}^{(d)}}, \mathbf{i}_d = n_d \end{cases}$$

- P199:

$$a_{i_{1,\ldots}i_d} = \sum_{j=1}^{t} u^1_{i_{1,}j} \cdots u^d_{i_{d,}j}. \rightarrow a_{i_{1,\ldots,}i_d} = \sum_{j=1}^{t} u^1_{i_{1,}j} \cdots u^d_{i_{d,}j}.$$

- P204, isolated, unnumbered formula starting with $a_{i_1,\ldots,i_d}$: replace all subscripts "i" of "c" with "j", i.e.

$$a_{i_1,\ldots,i_d} = \sum_{j_1=1}^{t} \cdots \sum_{j_d=1}^{t} \sum_{s=1}^{t} c_{i_1,\ldots,i_k,s} c_{i_{k+1},\ldots,i_d,s} u^1_{i_1,j_i} \cdots u^d_{i_d,j_d}$$

$$\rightarrow$$

$$a_{i_1,\ldots,i_d} = \sum_{j_1=1}^{t} \cdots \sum_{j_d=1}^{t} \sum_{s=1}^{t} c_{j_1,\ldots,j_k,s} c_{j_{k+1},\ldots,j_d,s} u^1_{i_1,j_i} \cdots u^d_{i_d,j_d}$$

Chapter 10

- P210, isolated unnumbered formula: replace occurrence of "s" by "S"

$$\tilde{S} := \overset{k}{\underset{j=1}{\cup}} s^j. \rightarrow \tilde{S} := \bigcup_{j=1}^{k} S^j.$$

- P211, unnumbered formula in line 3: replace first occurrence of s′ by $\mathbf{s}'$, i.e.,

$$\tilde{p}^a_{s(s',s')} := \begin{cases} p^a_{\mathbf{s},s'}, & \mathbf{s}' = \mathbf{s}_*, \\ 0, & \text{otherwise}, \end{cases} \quad a \in A. \rightarrow$$

$$\tilde{p}^a_{s(\mathbf{s}',s')} := \begin{cases} p^a_{\mathbf{s},s'}, & \mathbf{s}' = \mathbf{s}_*, \\ 0, & \text{otherwise}, \end{cases} \quad a \in A.$$

- P212, paragraph below eq. 10.4, fist line: replace both occurrences of "s" in the superscript of C by "S", i..e.,

$$C \in \Re^{m \times s \times s} \rightarrow C \in \Re^{m \times S \times S}$$

- P213, isolated unnumbered formula after eq. 10.6, subscript below "min":
  - replace "C" by "$\overline{C}$"
  - replace all occurrences of "s" by "S"

$$\min_{C \in \Re^{m \times s \times s}} \left\| \widehat{P} - U \otimes_1 \overline{C} \right\|_F \rightarrow \min_{\overline{C} \in \Re^{m \times S \times S}} \left\| \widehat{P} - U \otimes_1 \overline{C} \right\|_F.$$

- P214, unnumbered isolated formula in the middle of the page:
  - replace "$\widehat{p}_{(1)}$", "$\widehat{p}_{(2)}$", "$\widehat{p}_{(3)}$" by "$\widehat{P}_{(1)}$", "$\widehat{P}_{(2)}$", "$\widehat{P}_{(3)}$"

- P214: paragraph below unnumbered isolated formula in the middle of the page
  - L1: replace first occurrence of "$\widehat{p}_{(i)}$" by "$\widehat{P}_{(i)}$"
  - L2: replace only occurrence of "$\widehat{p}_{(2)}$" by "$\widehat{P}_{(2)}$"
- P215, top (first formula):
  - replace occurrence of "$\widehat{p}^{(1)}$" by "$\widehat{P}^{(1)}$"
- P216, first unnumbered isolated formula after section title:
  - replace all occurrences of "$\overline{P}$" by "$\overline{p}$", i.e.,

$$\overline{P}_{\mathbf{s}ss'} := \left(1-t^{-1}\right)\overline{P}_{\mathbf{s}ss'} + t^{-1}. \rightarrow \overline{p}_{\mathbf{s}ss'} := \left(1-t^{-1}\right)\overline{p}_{\mathbf{s}ss'} + t^{-1}$$

- P216, eq. 10.7:
  - replace occurrence of "C^{-1}" by "$\overline{C}$", i.e.,

$$\begin{aligned}&\overline{C} := \left(1-t^{-1}\right)C^{-1} + t^{-1}\frac{e_{\beta(\mathbf{s})}}{G_{\beta(\mathbf{s})}} \otimes e_s \otimes e_{s'},\\ &\rightarrow\\ &\overline{C} := \left(1-t^{-1}\right)\overline{C} + t^{-1}\frac{e_{\beta(\mathbf{s})}}{\left|G_{\beta(\mathbf{s})}\right|} \otimes e_s \otimes e_{s'},\end{aligned}$$

- P216, eq. 10.8:
  - replace all occurrences of "C" by "c", i.e.,

$$C_{ss'\beta(\mathbf{s})} := \left(1-t^{-1}\right)C_{ss'\beta(\mathbf{s})} + t^{-1}. \rightarrow c_{ss'\beta(\mathbf{s})} := \left(1-t^{-1}\right)c_{ss'\beta(\mathbf{s})} + t^{-1}.$$

- P219, last formula in the *proof* of Proposition 10.1:
  - replace all occurrences of "U" by "u" and remove spaces before subscripts, i.e.,

$$U_\beta = U'_{\beta'_1} + \cdots + U'_{\beta'_1}. \rightarrow u_\beta = u'_{\beta'_1} + \cdots + u'_{\beta'_1}. \qquad \square$$

- P219, formula before last line:
  - replace first occurrence of "s" by "**s**" (bold!), i.e.,

$$z := \gamma\lambda z + e_{(s,s),}\theta := \theta + \alpha\Phi^T zd(\Phi\theta), \rightarrow z := \gamma\lambda z + e_{(\mathbf{s},s),}\theta := \theta + \alpha\Phi^T zd(\Phi\theta),$$

- P223, formula after "Moreover, we obtain":
  - replace last occurrence of "β" by "$\tilde{\beta}$", i.e.,

$$U^T U = \left(\left|G_\beta \cap \tilde{G}_{\tilde{\beta}}\right|\delta_{\alpha\beta}\right)_{\beta,\beta\in\underline{m}} \rightarrow U^T U = \left(\left|G_\beta \cap \tilde{G}_{\tilde{\beta}}\right|\delta_{\alpha\beta}\right)_{\beta,\tilde{\beta}\in\underline{m}}.$$

- P224, eq. 10.13:
  - Replace occurrences of "s" in the superscript of "$\mathfrak{R}$" by "S", i.e.,

$$P \in \mathfrak{R}^{\hat{s}\times s\times s\times \overline{A}} \rightarrow P \in \mathfrak{R}^{\hat{S}\times S\times S\times \overline{A}}$$

- P223, paragraph after eq. 10.13, L2:
  - Replace occurrences of "s" in the superscript of "$\mathfrak{R}$" by "S", i.e.,

$$R \in \mathfrak{R}^{\hat{s}\times s\times s\times \overline{A}} \rightarrow R \in \mathfrak{R}^{\hat{S}\times S\times S\times \overline{A}}$$

- P223, paragraph after eq. 10.13, L3:
  - 5th word: replace occurrences of "s" in the superscript of "$\mathfrak{R}$" by "S", i.e.,

$$R \in \mathfrak{R}^{\hat{s}\times s\times s} \rightarrow R \in \mathfrak{R}^{\hat{S}\times S\times S\times \overline{A}}$$

  - last-but-one-word: replace occurrences of "s" in the superscript of "$\mathfrak{R}$" by "S", i.e.,

$$\mathfrak{R}^{\hat{s}\times s\times s} \rightarrow \mathfrak{R}^{\hat{S}\times S\times S}$$

- P223, paragraph after eq. 10.13, L4, last word:
  - replace occurrence of "s" in the superscript of "$\mathfrak{R}$" by "S", i.e.,

$$\mathfrak{R}^{\hat{s}\times s} \rightarrow \mathfrak{R}^{\hat{S}\times S}$$