Errors Discovered in the First Print

Chapter 2

p. 13, lines 5 and 6, (2.13) should be (2.35).
p. 38, line 4. q_1 should be q_0.
p. 23, fourth line below Definition 2.25. $\mathcal{S}_p \subset \mathcal{S}_q$ should be $\mathcal{S}_q \subset \mathcal{S}_p$.
p. 44, line 11. "if and only" should be "if and only if".
Problem 6. $H(Y|X)$ should be $H(X|Y)$.
Problem 7. p'_x should be p'_X.
Problem 23. The first inequality should read $D(p||q) \geq cV^2(p,q)$.

Chapter 4

p. 83, the line below (4.10). "$A_4 = 8$" should be "$A_4 = 4$".

Chapter 3

p. 74, line 11. "Fu et al. [125]" should be "Fu and Yeung [125]".
p. 59, (3.50) and the remaining of the sentence should be

$$\tilde{X}_k - \tilde{X}_{i,j}, \tilde{X}_i \cap \tilde{X}_j - \tilde{X}_k, \tilde{X}_1 \cap \tilde{X}_2 \cap \tilde{X}_3, \text{where } 1 \leq i < j \leq 3 \text{ and } k \neq i, j.$$

p. 60, the line below (3.60) should be "Now for any $1 \leq i < j \leq 3$ and $k \neq i, j$,".

Chapter 6

p. 116, (6.29). $=$ should be $\leq$ because the summation is over $\mathcal{S}_X$ which may be smaller than $\mathcal{X}$.
p. 132, **Strongly Typical Set:**

$$T^n_{[X]\delta} = \left\{ \mathbf{x} \in \mathcal{X}^n : N(x;\mathbf{x}) = 0 \text{ for } x \notin \mathcal{S}_X \text{ and } \sum_x \left| n^{-1} N(x;\mathbf{x}) - p(x) \right| \leq \delta \right\}.$$

p. 133, Problem 6. The last line should be "for n sufficiently large, where ..."

Chapter 7

p. 157, Fig. 7.11. "upper bound" should be "lower bound".
p. 161. In (7.160), the Markov chain should be $(\tilde{\mathbf{X}}(1), \tilde{\mathbf{X}}(2), \cdots, \tilde{\mathbf{X}}(M), W) \to \mathbf{X} \to \mathbf{Y}$.
p. 161, (7.164) should read

$$\sum_{w'=1}^{M} \Pr\{W = w'\} I(\mathbf{Y}; \tilde{\mathbf{X}}(w) | \mathbf{X}, W = w') = 0.$$

In other words, the dummy variable in the summation should be w' instead of w.
p. 161, the intermediate step (7.166) is unnecessary.
p. 176, Problem 3, second line. "$X_i = Y_i + Z_i$" should be "$Y_i = X_i + Z_i$".

Chapter 9

p. 187, line -2. $g(f(1)), g(f(2)), \cdots, g(f(M))$ should be $g(1), g(2), \cdots, g(M)$.
p. 216, the middle line in (9.41). $p(x|y) > 0$ should be $p(y|x) > 0$.
p. 217, line 7. $p(x|y) = 0$ should be $p(y|x) = 0$.
p. 219, line 14. $I(X, \hat{X})$ should be $I(X; \hat{X})$.
p. 219, lines 16 and 18. $(I(\mathbf{p}, \mathbf{Q}), D(\mathbf{p}, \mathbf{Q}))$ should be $(D(\mathbf{p}, \mathbf{Q}), I(\mathbf{p}, \mathbf{Q}))$.
p. 220, line 1. $(R(D_s), D_2)$ should be $(D_s, R(D_s))$.
p. 220, (9.64) and (9.65). In the infumum, $Q > 0$ should be $\mathbf{Q} > 0$.
p. 222, (9.79) and two lines above. $(R(D_s), D_s)$ should be $(D_s, R(D_s))$.
p. 222, (9.79) and one line below. $(I(\mathbf{p}, \mathbf{Q}^{(k)}), D(\mathbf{p}, \mathbf{Q}^{(k)}))$ should be $(D(\mathbf{p}, \mathbf{Q}^{(k)}), I(\mathbf{p}, \mathbf{Q}^{(k)}))$.

Chapter 10

p. 232, eqn (10.25) should read $|Q| = |Q^\top| = \pm 1$.
p. 241. Equation (10.101) should read

$$h(Y|X) = \int_{\mathcal{S}_X} h(Y|X = x) dF(x) = -E \log f(Y|X).$$

Same typo in the chapter summary on p. 253.
p. 242, line -7. "joint pdf" should be "continuous joint pdf".
p. 255. Problem 7 should read "For a continuous random variable X, ..."

Chapter 11

p. 260, line -4. $\mathcal{X}^n$ should be $\Re^n$.
p. 261, Definition 11.10 should be

Definition 11.10 For all $1 \le w \le M$, let

$$\lambda_w = \Pr\{\hat{W} \neq w | W = w\} = \int_{\{\mathbf{y} \in \mathcal{Y}^n : g(\mathbf{y}) \neq w\}} f_{\mathbf{Y}|\mathbf{X}}(\mathbf{y}|e(w)) d\mathbf{y}$$

be the conditional probability of errorıconditional probability of error given that the message is w.

p. 263, the line above (11.56). "and (n, M) code" should be "an (n, M) code".
p. 278, eqn (11.190). Q should be $Q^\top$ throughout.
p. 281, two lines below (11.208). "wired-line" should be "wireline".
p. 294, line 5. "the last section" should be "Section 11.6".
p. 296, Problem 3. $2^{-n(I(X;Y)-\delta)}$ should be $2^{-n(I(X;Y)+\delta)}$.
p. 297, Problem 9. $Z(t) * h_2(t')$ should be $Z(t') * h_2(t')$.

Chapter 12

p. 312, Definition 12.18. $\bigcup_{l=1}^{k}$ should be $\bigcup_{l=1}^{m}$.
p. 319, (12.108) and (12.109). $\tilde{X}_{U_{A \cup (W \setminus S)}}$ should be $\tilde{X}_{U_A \cup (W \setminus S)}$.

Chapter 13

p. 338, line -5. "Han [144]" should be "Han [148]".

Chapter 16

p. 398, two lines below Theorem 16.22. "strong conditional AEP" should be "conditional strong AEP".

Chapter 18

Problem 1. $F_+(s) = F_-(t)$ should be $F_-(s) - F_+(s) = F_+(t) - F_-(t)$.
Problem 5. In lines 4 and 5, t_l should be t.

Chapter 19

p. 437, Section 19.2, line 6. "trivially" should be "triviality".
p. 443, Section 19.3, (19.32). It should read $V_T = \langle \cup_{t \in T} \{\mathbf{f}_e : e \in \mathrm{In}(t)\} \rangle$.
p. 446. In Figure 19(c), the global encoding kernel for channel (s,u) should be $[0\ 0]^\top$ instead of $[1\ 0]^\top$.
p. 450, line 13. The second $[y_i\ z_i]^\top$ should be $[y_j\ z_j]^\top$.
Problem 3(b), line 4. "obtaining" should be "obtained".

Chapter 20

p. 488, eqn (20.14). "K_S" should be "K_s".

Chapter 21

p. 534, one line above (21.241). "strong conditional AEP" should be "conditional strong AEP".
Problem 8, second last line. Change (21.13) to $\Delta_t \leq |T|\epsilon, t \in T$.

Bibliography

References [180] and [335] can be merged. The author is Shunsuke Ihara.
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