Errata in Stoch Processes, Theory for Apps

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The following list of typos and errata, as of 2/8/2021, will be kept up to date as new errors are found. I would greatly appreciate anyone finding errors to let me know at gallager@mit.edu.

p10, line 9 and the following equation should be: for any disjoint events, $A_1, A_2, \ldots$, and any event $B$ with $\Pr \{ B \} > 0$,

$$\Pr \left\{ \left( \bigcup_n A_n \right) \mid B \right\} = \sum_n \Pr \{ A_n \mid B \}.$$

p17, last line of text: ...Each $X_R$... should be ...Each $X_k$...

p31, Eq. 1.54: ...$\exp(-i2\pi\theta)$... should be ...$\exp(-2i\pi\theta x)$...

p31, Eq. 1.55: ...$dx$... should be ...$d\theta$...

p32, Fig. 1.7, end of caption: ...$E[Y] \leq \infty$... should be ...$E[Y] < \infty$...

p35, Eq. 1.68: ...$\ln \frac{q}{\tilde{q}}$... should be ...$\ln q$...

p61, Exer. 1.11b: ...$\int_0^\infty F_X(x) \, dx + \int_{-\infty}^0 F_X(x) \, dx$... should be ...$\int_{-\infty}^\infty F_X(x) \, dx - \int_{-\infty}^0 F_X(x) \, dx$...

p64, Exer. 1.22: ...$p_Y(m) = \mu^n \exp(-\mu)/n!$... should be ...$p_Y(n) = \mu^n \exp(-\mu)/n!$...

p68, Exer. 1.38b: ...for some $\alpha < 1$... should be ...for some $\alpha$, $0 < \alpha < 1$...

p75, line 2 of Def. 2.2.3: ...rv (=1)... should be ...rv (i.e., if $Pr\{X > 0\} = 1$)...

p88: line 9 of Example 2.3.3: ...geometricly... should be ...geometrically...

p96, line 6: ...IID...should be...identically distributed...

p116, Thm 3.4.5, line 1: ...semi-definite... should be ...positive semi-definite...

p180, line 7 of Sec.4.5: ...viewed... should be ...viewed...

p183, Fig.4.7, above to right of self-loop on state 1: 1 should be $p_1$; also at right end of figure: $p_1$ should be 1.

p207, Exer. 4.20c: ...$1 + [P] + \cdots, [P^{d-1}]$... should be ...$1 + [P] + \cdots + [P^{d-1}]$...
p221, line 1: ...Using Lemma 5.3.2... should be ...Using Lemma 5.2.1...

p227, last line: ...lim_{t\to0}... should be ...lim_{t\to\infty}...

p238, Array of values for Pr(J < \infty) on left side of eqn. on line 3: ...1− for p = 0.5... should be ...1 for p = 0.5.; also ...0 for p > 0.5... should be ...1 for p > 0.5...

p275, line 1 of Exer. 5.14: ...(over the limiting interval (0, \infty) that... should be ...(over the limiting interval (0, \infty)) that...

p320, last eq. in Exer. 6.5: ...Pr{T_{ji} > \infty}... should be ...Pr{T_{ji} = \infty}...

p331, line 2 of final paragraph of Sec.7.2.1: ...identically... should be ...identically...

p345, Eq. 7.50 ...q_{ij}^* = \nu_j P_{ij}^* ... should be ...q_{ij}^* = \nu_i P_{ij}^* ...

p421, the unnumbered eqn. before 9.6: ...Z_t^n = \sum_{j=1}^{i-1} U_{n-j} ... should be ...Z_t^n = \sum_{j=0}^{i-1} U_{n-j} ...

p443, line below first eqn: ...the threshold at \alpha... should be ...the threshold at \beta...

p443, line above second eqn: ...linear in |\beta|... should be ...linear in \alpha...

p465, first eqn.: ...\sum_j \lambda(j) \ln [E[X(j)]] ... should be ...\ln [\sum_j \lambda(j)E[X(j)]] ...

p466, line 1 of final paragraph: ...submartingale... should be ...supermartingale...

p474, line 3 of Exer. 9.2: ...X_i - Y_{i-1} ... should be ...Y_{i-1} - X_i ...

p486, line 1: ...log-w!alth... should be ...log-wealth...

p486, Replace parts a, b, and c of Exer. 9.37 with: a) Let Z_n = \frac{1}{n}L_n(\lambda) - E[Y(\lambda)] and explain why lim_{n\to\infty} Z_n = 0 WP1. Let A(n_0, \epsilon) = \{\omega : |Z_n(\omega)| \leq \epsilon for all n \geq n_0\}. Consider an \omega for which lim_{n\to\infty} Z_n(\omega) = 0 and explain why \omega \in A(n_0, \epsilon) for some n_0. b) Show that Pr(\bigcup_{n=1}^{\infty} A(n_0, \epsilon)) = 1. c) Show that for any \delta > 0, there is an n_0 large enough that Pr(\{A(n_0, \epsilon)\}) > 1 - \delta. Hint: Use (1.9).

p490, Eq. 10.5: ...E[\hat{X}_{MMSE}^T \hat{Y}_{MMSE}^T] ... should be ...E[\xi_{MMSE}^T \hat{X}_{MMSE}^T] = 0...

p492, Eq. 10.9: ...[G]y ... should be ...[G]y ...

p501, last line of Footnote 4: ...addional... should be ...additional...

p511, Eq. 10.91: ...\beta E[Y_i] ... should be ...\beta E[Y_i] ...

p525, line 2 of Exer. 10.6: ...Y = [H]X + Z ... should be ...Y = [H]X + Z where X, Z are independent...

p525, line 1 of Exer. 10.10: ...(X = X_1, ..., X_n)^T ... should be ...X = (X_1, ..., X_n)^T ...

p526, Exer. 10.12c: ...[K_X] = 2([K_{re} - [K_{ri}]) ... should be ...[K_X] = 2([K_{re} - i[K_{ri}]]) ...

p527, line 2 of Exer. 10.15: ...V_x(y) ... should be ...v_x(y) ...

p527, lines 1, 2 of Exer. 10.16: ...V_x(y) ... should be ...v_x(y) ... at each appearance.