Typos in Essentials of Stochastic Processes

Page numbers are those of the second edition. We describe the location so that readers of the bootleg copies can find them.

page 12, near end of Section 1.2: 0.00054 from state 1, ... 0.00081 from state 3

page 16, proof of Theorem 1.5: all the $y_i \neq x$

page 24, after using the TI83 calculator the matrix should be

$$\begin{pmatrix} -0.3 & 0.2 & 1 \\ 0.3 & -0.5 & 1 \\ 0.2 & 0.4 & 1 \end{pmatrix}$$

Despite this, the stationary distribution is correct.

page 32, Example 1.24: ptential $\to$ potential

page 54, Theorem 1.27. It would be better to formulate the theorem as follows. Given a set F let $V_F = \min\{n \geq 0 : X_n \in F\}$ A, B are disjoint subsets of S so that $C = S - A \cup B$ is finite. Suppose $h(a) = 1$ for $a \in A$, $h(b) = 0$ for $b \in B$ and for $x \in C$

$$h(x) = \sum_y p(x, y)h(y)$$

If $P(V_A \wedge V_B < \infty) > 0$ then $h(x) = P_x(V_A < V_B)$.

page 55, Example 1.42: $\binom{N}{y}$ not $\frac{N}{y}$

page 60, Theorem 1.2.8: We do not need the first sentence. It is enough to suppose that $S - A$ is finite.

page 69, case 3, first displayed equation: $\phi'(y) \to \phi'(x)$

page 71, fifth line of Chapter Summary: $p^m(x, y) =$

page 76, problem 1.10: the last row should be 0, 0.3, 0, 0.7. The answer given on the next line is not supposed to be there.

page 85, problem 1.50: the Bishop's random walk is not irreducible, so we should retrict the state space to the red squares to do the problem.

page 88, problem 1.63: Part (a) is ambiguous. It should say, what fraction eventually becomes qualified.

page 89, problem 1.65: the last symbol at the end of the top row of the matrix should be **F**

page 96, proof of (2.11): $e^{-\lambda_1+\cdots+\lambda_n}$

page 97, third line of proof of Lemma 2.2: τ_{n+1} should be T_{n+1} twice.

page 98, Theorem 2.4: $X_1 + \cdots + X_k = \text{Poisson}(\lambda_1 + \cdots + \lambda_k)$

page 100, last line: $\to -\lambda$ (this is in part (iv) of the proof of Theorem 2.8)

page 117, problem 2.49: Wayne Gretzky

page 120, last display: Though this is not wrong, it would be better if the second $\leq$ should be $<$ (near the end of the proof of Theorem 3.2)

page 125, Theorem 3.5: fraction of time the server is busy is $\leq \lambda/\mu$

page 133, chapter summary: the average queue length is L.

page 134, Problem 3.3: their ten foot cars

page 136, Exercise 3.14: growth per year

page 136, Exercise 3.17: have arrrived the tour starts

page 143, Example 4.5: If we have $q(i, i+1) = \lambda i^p$ then $Et_m = 1/\lambda m^p$ and $ET_n = (1/\lambda)\sum_{m=1}^{\infty} 1/m^p$.

page 143, last line Y_n is simpler to simulate than $X(t)$

page 149, Lemma 4.2: $p_s(j, j) \geq \exp(-\lambda_j s) > 0$

page 152, Duke basketball example. Right after stationary distribution: and 3/29 (not 6/29) in state 3

page 155, line 3: adding up the π's ... so $c = 2/1382$.

page 156, line 4 of section 4.4: time of the first visit to k

page 157, middle:

$$h(i) = \sum_{j \neq i} \frac{q(i,j)}{\lambda_i} h(j)$$

this is in the derivation of (4.19).

page 158, middle. The LaTeX got messed up

$$g(1) = \frac{1}{5} + \frac{2}{5}g(2) \qquad g(2) = \frac{1}{5} + \frac{3}{5}g(1) + \frac{2}{5}g(3)$$

page 164, last line: $\lambda\pi(j-1) = s\pi(j)$ for $j \geq 3$. (Example 4.25, second detailed balance equation)

page 174, line -4: on $\rightarrow$ one

page 175, line 4: for $b \in A - \{i\}$) Delete the rest of the text before the display.

page 175, Exercise 4.1. rates are per month.

page 185: we introduce a class of processes

page 188, definition of martingale: M_n can be determined from $M_0, X_1, \ldots X_n$.

page 188, line 12: the process to the martingale M_n

page 190, Example 5.6:. In particular if $\phi(\theta) = 1$ them $\exp(\theta S_n)$ is a martingale

page 194, first equation in proof of Theorem 5.12:

$$W_{n+1} - W_n = H_{n+1}(M_{n+1} - M_n)$$

page 195, line 5 of Section 5.4: exist $\to$ exit distribution

page 196, Example 5.9: Bad martingale: $P_1(T < \infty) = 1$

page 198, Example 5.12: in the display x_i should be X_i.
Also two lines later in $e^{-\theta} P(x_i = -1) \to \infty$

page 200, near end of Example 5.13: Theorems 5.13 and 5.11 give (not gives)

page 202, line 7 of supercritical: $T_0 = \min\{n \geq 0 : S_n = 0\}$

page 205, Problem 5.6. (i) $Y_n = U_n U_{n-1} \cdots U_1$. (ii) show that $(1/n) \log Y_n \to -1$.

page 219, first example in Section 6.3. Hedging strategy at node 16 in time 2 is

$$\frac{0-8}{32-8} = -1/3.$$

page 220, put option. value at node 4 at time 1 is $0.4(2.4+6) = 3.36$, hedge at time 0 is

$$\frac{0.96 - 3.36}{16-4} = -0.2.$$

page 232, formula (6.29): $d = 1 - \sigma\sqrt{h} + (\sigma^2/2 + \mu h)$ i.e., no $+\mu h$

page 233, $EX_i^h = 2p_h^* - 1$

page 236, Example 6.10. Put-call parity. Should mention that $S_0 = 625$.

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