Errata List for: Fundamental Probability: A Computational Approach

Chapter 1 (Combinatorics)

1. page 26, line -13. Problem 4.1 should be: Problem 6.1(a).
2. page 28, line -6. dx should be $\mathrm{d}x$.
3. page 29, last line. It should read: ...in other contexts; see, for example, Havil (2003, p. 59).
4. page 30, middle. The incomplete gamma ratio should read: $\bar{\Gamma}_x(a) = \Gamma_x(a)/\Gamma(a)$.

Chapter 4 (Univariate Random Variables)

1. page 137, line 12. $\Pr(Y = n) = 0$ should be: $\Pr(Y_k = n) = 0$

Chapter 5 (Multivariate Random Variables)

1. page 171, bottom equation. The last part of the line should be $\int_{-\infty}^{y} f_Y(z)\,\mathrm{d}z$.
2. page 179, line -10. Remove the square root symbol from the term $4\left(\mathbb{E}[UV]\right)^2 - 4\mathbb{E}\left[U^2\right]\mathbb{E}\left[V^2\right]$.
3. page 183, line -13; page 186, lines 7 and -4. trinom$(\mathbf{x}; n, p_1, p_2)$ should be: trinom(n, p_1, p_2)
4. page 195, line -2. The three occurrences of y should each be r.

Chapter 6 (Sums of Random Variables)

1. page 211, line -2; page 212, line -2. It should be: $\mathbb{E}[T] = 1 + 2NZ/(N+Z)$

Chapter 7 (Continuous Univariate Random Variables)

1. page 266, line -7. "...will be discussed later" should be: will be discussed in Volume II.
2. page 277, line 2. Move the last parenthesis from "Ross (2002))" to the end of the sentence.

Chapter 8 (Joint and Conditional Random Variables)

1. page 286, top two equations. These are not incorrect per se, but would be much clearer to read by replacing them as follows:

$$\begin{aligned} F_X(x) &= \int_{-\infty}^{x}\int_{-\infty}^{\infty} f_{X,Y}(t,y)\,\mathrm{d}y\,\mathrm{d}t = \int_{-\infty}^{x} f_X(z)\,\mathrm{d}z \\ F_Y(y) &= \int_{-\infty}^{y}\int_{-\infty}^{\infty} f_{X,Y}(x,t)\,\mathrm{d}x\,\mathrm{d}t = \int_{-\infty}^{y} f_Y(z)\,\mathrm{d}z. \end{aligned}$$

2. page 286, line -5. The statement "which, in this case, does not depend on y" should be removed. Of course it does not depend on y, because as the margin of X, y gets integrated out. (I was incorrectly thinking about it being the conditional distribution of X given Y.)
3. page 289, equation (8.3), it should be $\dfrac{z^2/2}{1/2}$ and not $2 \cdot \dfrac{z^2/2}{1/2}$.

4. page 293, line 4, replace $f(t, y_0)$ with $f_{X,Y}(t, y_0)$ and replace $f(y_0)$ with $f_Y(y_0)$.

5. page 293, line 5, replace $f(x, y_0)$ with $f_{X,Y}(x, y_0)$ and replace $f(y_0)$ with $f_Y(y_0)$.

6. page 314, line -3. The "definition operator" := should be the other way around, i.e., =:.

7. page 321. Add a "difficulty star" ★ to Problem 8.14 and add to the end: (Answer: 2/3).

Chapter 9 (Multivariate Transformations)

1. page 339, end of Problem 9.2, change "will be considered in a chapter on quadratic forms in Volume II" to "is detailed in Paolella (2018, App. A)". That book is *Linear Models and Time-Series Analysis: Regression, ANOVA, ARMA and GARCH*, John Wiley & Sons, 2018.

Appendix A (Calculus Review)

1. page 383, line 13. It should be: $s_n > L - \epsilon$.

2. page 383, line 14. It should be: $s_k < L + \epsilon$.

3. page 384, line 6. It should be: $p \in \mathbb{R}_{>1}$

4. page 434, Example A.79, at the end of the equation which comes after "Then, observe that", the exponent should be $-\left(x^2 + y^2\right)$ and not $-x^2 + y^2$.

Appendix C (Distribution Tables)

1. page 446, Table C.5, footnote. A Weibull r.v. has a moment generating function for $\beta \geq 1$, in which case, it is given by the expression for $\mathbb{E}[X^k]$ and

$$\mathbb{M}_X(t) = \mathbb{E}\left[\mathrm{e}^{tX}\right] = \mathbb{E}\left[\sum_{k=0}^{\infty} \frac{(tX)^k}{k!}\right] = \sum_{k=0}^{\infty} \frac{t^k}{k!} \mathbb{E}\left[X^k\right].$$

2. page 447, Table C.6, entry 12. Numerator of K_n should be $n^{-1/2}$ and not $v^{-1/2}$.