

# Errata II: Second Printing of Mitzenmacher/Upfal Probability and Computing

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The following errors were found after the posting the first errata, and after the second printing of the book:

- Page 10, line -5: replace “are mutually disjoint sets such that” with “are mutually disjoint events in the sample space  $\Omega$  such that”, and replace “=  $E$ ” with “=  $\Omega$ ”.
- Page 12, the equation in line 3, last part: change “ $2^i$ ” to “ $2^{i+1}$ ”. In line 5, change “ $2^{100}$ ” to “ $2^{101}$ ”
- Page 12, line 3, change “ $2/n(n-1)$ ” to “ $2/(n(n-1))$ ”. **MM: I do’t feel strongly about this one, up to you.**
- Page 21, line 15, change

$$\Pr\left(\bigcap_{i \in I} X_i = x_i\right).$$

to

$$\Pr\left(\bigcap_{i \in I} (X_i = x_i)\right).$$

**MM: I do’t feel strongly about this one, up to you.**

- Page 36, Replace “There is a also” with “There is also”.
- Page 38, Exercise 2.3: Replace “ $\leq$ ” with “ $<$ ” and “ $\geq$ ” with “ $>$ ”.

- Page 60, Exercise 3.23: change the second sentence to “Bound the error probability and the running time of the resulting algorithm.”
- Page 64, line -8: change “ $\Pr(X_i) = p_i$ ” to “ $\Pr(X_i = 1) = p_i$ ”.
- Page 64, line -5: change “ $<$ ” to “ $\leq$ ”.
- Page 66, line 2: change “ $\Pr(X_i) = p_i$ ” to “ $\Pr(X_i = 1) = p_i$ ”.
- Page 67, line 1: change “ $\Pr(X_i) = p_i$ ” to “ $\Pr(X_i = 1) = p_i$ ”.
- Page 73, line -10: change “ $2nN$ ” to “ $nN$ ”.
- Page 86: Exercise 4.16: change “ $\Pr(X_i) = p_i$ ” to “ $\Pr(X_i = 1) = p_i$ ”, and add the condition: “ $|a_i| \leq 1$  for  $1 \leq i \leq n$ ”.
- Page 95, line 2-3: change “ $X_j$ ” to “ $X_i$ ”, “ $j$ th bin” to “ $i$ th bin” and “ $E[X_j]$ ” to “ $E[X_i]$ ”. **MM This change doesn’t seem necessary to me?**
- Page 108, line -9: the phrase “if we use  $b$  bits for the fingerprint” should appear at the end of the prior sentence.
- Page 109, Figure. To match the text, in the figure replace  $x_1$  and  $x_2$  by  $s_1$  and  $s_2$ , and replace  $y$  by  $x$ .
- Page 129, line 1: change “at least \$3” to “\$3”.
- Page 133, Theorem 6.5: Change “be a graph” to “be a connected graph”.
- Page 184, Exercise 7.19: change “until they” to “until she”. **MM This change doesn’t seem necessary to me? But if you like, we also have to change lose to loses and win to wins.**
- Page 190, line 4: change “ $[x, x + dx)$ ” to “ $(x, x + dx)$ ”.
- Page 190, line 9: change “ $\Pr(a \leq x < b)$ ” to “ $\Pr(a < x \leq b)$ ” **MM: this change doesn’t seem to match the text line above.**
- Page 197, Figure 8.4 (a) and (b): change the indeterminate term in the density function and the distribution function from “ $t$ ” to “ $x$ ”.

- Page 232, line 16: change “most likely be” to “most likely to be”.
- Page 274: Definition 11.2: change “of a Markov chain” to “of an ergodic Markov chain”.
- Page 278, line -13: In the equation, replace “ $\ln(k/\epsilon^{-1})$ ” should be “ $\ln(k\epsilon^{-1})$ ”.
- Page 284, line -2: change “ $A(t)$ ” to “ $A_t$ ”.
- Page 290 , Exercise 11.3: change “for shuffling cards” to “for shuffling  $n$  cards”.
- Page 299, line 12: change “ $X_0, X_2,$ ” to “ $X_0, X_1,$ ”.
- Page 315, line 7, change

$$\Pr \left( \bigcap_{i \in I} X_i = x_i \right).$$

to

$$\Pr \left( \bigcap_{i \in I} (X_i = x_i) \right).$$

**MM: I do’t feel strongly about this one, up to you.**

- Page 321: caption of section 13.3: change to “Universal Families of Hash Functions”.
- Page 323, line 14: change “ $0 \leq b \leq p$ ” to “ $0 \leq b \leq p - 1$ ”.
- Page 326, line -9 and line -3: change “=” to “ $\leq$ ”.
- Page 335, Exercise 13.12: change “ $0 \leq b \leq p$ ” to “ $0 \leq b \leq p - 1$ ”.
- Page 336, line -8: change “the reduction” to “for any constant  $d$  the reduction”.
- Page 342: line - 15: change “ $R = (n)$ ” to “ $R = \lfloor n \rfloor$ ”.