List of Errata and Suggested Rephrasing

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There are a few typos in the book ”Performance Evaluation of Computer and Communication Systems” by Jean-Yves Le Boudec. Most of them have been corrected in the recent version (version 2.3 of 28th of July, 2014) in the following link:

`http://perfeval.epfl.ch/`

Nonetheless, there are a few more left over, which may hinder readers from understanding the content of the book by any chance. I also added some suggestions for rephrasing because the book tends to be a bit terse for many engineers.

Chapter 3

- Page 66: three instances of $y_{(2I+1)/2} \Longrightarrow y_{(I+1)/2}$

Chapter 4

- Page 98: non equivocal $\Longrightarrow$ unequivocal
- Page 99: A type 1 error occurs ... $\Longrightarrow$ A type 1 error, usually called α, occurs ...
- Page 99: a type 2 error occurs ... $\Longrightarrow$ a type 2 error, usually called β, occurs ...
- Page 103: It is in fact the minimum test size required to reject H_0. $\longrightarrow$ It is in fact the minimum test size required to reject H_0. Note however that a small p-value that indicates statistical significance does not indicate that an alternative hypothesis is *ipso facto* correct, either.
- Page 105: $(x_i^2 - \hat{\mu}_n^+)^2 \Longrightarrow (x_i - \hat{\mu}_n^+)^2$
- Page 117: ((X_k, Y_k) is independent of $(X_k, Y_{k'})$ and has the same distribution) $\Longrightarrow$ ((X_k, Y_k) is independent of $(X_{k'}, Y_{k'})$ and has the same distribution)
- Page 119: The pivot is $\Longrightarrow$ We first define *pivot* as a function of observations and unobservable parameters whose probability distribution does not depend on unknown parameters. The Kolmogorov-Smirnov pivot is

Chapter 6

- Page 164: A stationary simulation is such that you gain no information about its age by analyzing it. $\Longrightarrow$ To put it in an informal yet the most insightful way which is easy to remember as well, a stationary simulation is such that you gain no information about its age by analyzing it.
- Page 174: p-VALUE OF A TEST $\Longrightarrow$ p-VALUE OF A GOODNESS OF FIT TEST
- Page 175: In the second case, the p-value is smaller than 0.95 $\Longrightarrow$ In the second case, the p-value is smaller than 0.05
- Page 176: The period of a random number generator should be much smaller than the number of times it is called in a simulation. $\Longrightarrow$ The period of a random number generator should be much *longer* than the number of times it is called in a simulation.
- Page 179: $x \in \text{Id} \Longrightarrow x \in I$

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CHAPTER 7

- Page 212: ΔX_t and Δ_t have the same meaning.
- Page 212: $\mathbf{1}_{\{t \leq T_n\}} \Longrightarrow \mathbf{1}_{\{T_n \leq t\}}$
- Page 213: $\mathbf{1}_{\{t \leq T_n^j\}} \Longrightarrow \mathbf{1}_{\{T_n^j \leq t\}}$
- Page 218: It is often presented in the context of renewal processes $\Longrightarrow$ It is often presented in the context of renewal processes (where interarrival times of points are i.i.d.)
- Page 220: $(Z_n, S_n..., Z_{n+m}, S_{n+m})$ is independent of $m \Longrightarrow (Z_n, S_n, ..., Z_{n+m}, S_{n+m})$ is independent of n
- Page 229: When a packet is delivered $\Longrightarrow$ Whenever a packet is delivered
- Page 229: there is exactly 1 customer during half of the time $\Longrightarrow$ there is exactly 1 customer during the first half of the time

CHAPTER 8

- Page 240: $A(t) \leq (D(t+u) \Longrightarrow A(t) \leq D(t+u)$
- Page 241: Append the following sentence at the end of Theorem 8.11 (Reich) – Here the value of $s = s^*$ which maximizes the above expression corresponds to the time when the current busy period started. In other words, the above expression traces back the beginning of the current busy period.
- Page 241: A bound on buffer size is the vertical distance between $A(t)$ and $A'(t) \Longrightarrow$ A bound on buffer size is the vertical distance between $(D1)$ and $(D2)$
- Page 244: in the system an arbitrary time $\Longrightarrow$ in the system at an arbitrary time
- Page 244: If it is a B-server queue $\Longrightarrow$ If it is a s-server queue
- Page 246: Z (in Eq. (8.2)) $\Longrightarrow \bar{Z}$
- Page 249: $\mathcal{L}_W(s) = \dfrac{s(1-\rho)}{s - \lambda + \mathcal{L}_S(s)} \Longrightarrow \mathcal{L}_W(s) = \dfrac{s(1-\rho)}{s - \lambda + \lambda\mathcal{L}_S(s)}$
- Page 249: Note that, by PASTA, the waiting time has the same distribution as the workload sampled at an arbitrary point in time. $\Longrightarrow$ Note that, by PASTA, the waiting time has the same distribution as the workload sampled at an arbitrary point in time. The above equation is one of the main formula of M/GI/1 queue and derived in detail in classical queueing theory books (See, for example, [46]).
- Page 249: $\frac{1}{2}(1 + \text{CoV}_S) \Longrightarrow \frac{1}{2}\left(1 + \text{CoV}_S^2\right)$
- Page 250: One approach is based on a the following equation $\Longrightarrow$ One approach is based on the following equation
- Page 253: conditional to its service time S_0 satisfies [47] $\Longrightarrow$ conditional to its service time S_0, *proportional* to the size of each customer's job, satisfies [47]
- Page 262: a Whittle Network is a single class network with PS service stations $\Longrightarrow$ a Whittle Network is a single class network with *multiple* PS service stations
- Page 263: Classes 1, 2 or 3 represent internal jobs $\Longrightarrow$ Classes 1, 2 or 3 represent external jobs
- Page 263: Jobs of classes 1, 2 or 3 are internal jobs $\Longrightarrow$ Jobs of classes 1, 2 or 3 are external jobs
- Page 270: Note that the station function depends only on the traffic intensities $\Longrightarrow$ Note first, by plugging (8.33) and (8.39) into (8.51), that the stationary probability distribution depends only on the traffic intensities
- Page 273: $\vec{K}_C$ is the number of customers of chain $\mathcal{C} \Longrightarrow K_C$ is the number of customers of chain $\mathcal{C}$
- Page 285: $\dfrac{1}{\tilde{\theta}_{\mathcal{C}}} \displaystyle\sum_{s \in \mathcal{S}, c \in \mathcal{C}} \theta_c^s q_{c,c'}^{s,s'}$ if $c \in \mathcal{C} \Longrightarrow \dfrac{1}{\tilde{\theta}_{\mathcal{C}}} \displaystyle\sum_{s \in \mathcal{S}, c \in \mathcal{C}} \theta_c^s q_{c,c'}^{s,s'}$ if $c' \in \mathcal{C}$
- Page 300: A major pattern of single queue system is the nonlinearity of response time, as in Figure 8.7 $\Longrightarrow$ A major pattern of single queue system is the nonlinearity (or *superlinearity*) of response time with respect to the utilization factor ρ, as in Figure 8.7
- Page 303: (Section 8.6.5) $\Longrightarrow$ (Section 8.6.7)