1 Algorithms on Words

• page 5, line 4 : replace the first sentence by ‘The radix order is defined by \( x < y \) if \( |x| < |y| \) or \( |x| = |y| \) and \( x = uax' \) and \( y = uby' \) with \( a, b \) letters and \( a < b \).

• page 14 : Replace Figure 1.6 by the figure below.

\[ x : \]

\[ k \quad k + j - i \quad k + j \]

• page 26 : replace Figure 1.16 on the right by the figure below.

\[ 1234 \quad 234 \quad 123 \quad 1 \]

\[ a \quad a \quad b \quad b \]

• page 27 : replace Figure 1.17 on the right by the figure below.
• page 41, line -7: add at the end of the paragraph ‘For simplicity, we discard the possibility of multiple edges in the resulting automaton.’

• page 45, line -8 : replace ‘where $u$’ by ‘where $\lambda$’

• page 71, lines 6, 13, 16, 20: replace ‘nonnegative matrix $M$’ by ‘nonnegative $Q \times Q$-matrix $M$’.

• page 71, line -16: Replace assertion 2 by : If $M \leq N$, then $\rho_M \leq \rho_N$. If $M$ is moreover irreducible and $M \neq N$, then $\rho_M < \rho_N$.

• page 71, ligne -15: Replace assertion 3 by ‘There corresponds to $\rho_M$ a nonnegative eigenvector and, if $M$ is irreducible, $\rho_M$ is the only eigenvalue with this property.’

• page 71, replace line -10 by ‘than $\rho = \rho_M$. Moreover, $(1/\rho^n)M^n$ converges to a matrix...’

• page 71, last sentence : replace the sentence by

‘The corresponding nonnegative eigenvector $y$ of $U$ or $W$ can be completed to a nonnegative eigenvector $x$ of $M$. Indeed, if $y$ is an eigenvector of $U$ for the eigenvalue $\rho_U$, then $x = \begin{bmatrix} y \\ 0 \end{bmatrix}$ is an eigenvector of $M$ for the same eigenvalue. If $y$ is a nonnegative eigenvector of $W$ for the eigenvalue $\rho_W > \rho_U$, then the matrix $T = \rho_W I - U$ is invertible with a nonnegative inverse and $x = \begin{bmatrix} z \\ y \end{bmatrix}$ with $z = T^{-1}V y$ is a nonnegative eigenvector of $M$.’

• page 72, line 23 : replace $|z|$ by $|\lambda|$.

• page 72, line -3 : replace $b_{i,j}$ by $n_{i,j}$.

• page 73, line 17 : colinear.

• page 75, line 17 : $E(X) = nq$.

• page 76, line 12 : replace ‘tends to $\pi(a)$’ by ‘tends to $\pi(a)$, provided the chain is aperiodic’.

• page 76, line -1 : replace $\pi(1, b, 2)$ by $\pi(1, b, 3)$.
• page 77, line 1 : replace \( \pi(2, b, 2) = 1 \) by \( \pi(3, b, 3) = 1 \).

• page 81, line -7 : Replace the sentence ‘Since...\( \sum_{a \in A} H a \pi(a) \).’ by ‘Since \( \pi \) is the stationary distribution, \( P(X_n = a) = \pi(a) \) for all \( n \geq 1 \) and thus \( H(X_{n+1} | X_n) = \sum_{a \in A} H a \pi(a) \).’

• page 83, line 13: change ‘and let \( M \) be’ by ‘and let \( M = (m_{ij}) \) be’

• page 83, line -3, change to: ‘The entropy of the Markov chain is \( \log \lambda \). Indeed, let \( D = (d_{ii}) \) be the diagonal matrix with \( d_{ii} = v_i \). Then \( P = (1/\lambda)^{-1}MD \) and thus \( P^n = (1/\lambda^n)^{-1}M^nD \) for all \( n \geq 1 \). Therefore, the probability of any path \( \gamma \) of length \( n \) from \( i \) to \( j \) is’

• page 84, line -11: change ‘We have’ to ‘We have, with \( \varphi = (1 + \sqrt{5})/2 \),’

• page 85, line 1: Ergodic sources and compression

• page 100, line -4 : replace ‘Show that \( w \mapsto T(w) \) is a bijection’ by ‘Show that the map \( w \mapsto T(w) \) is injective, up to conjugacy’.

• page 100, line -1 : replace \( \sum_{w \in S} z^{|w|} \) by \( \sum_{n \geq 0} \text{Card}(S \cap A^n) z^n \).

• page 101, line 3: : replace \( S(z) \) by \( S(z) = \sum_{n \geq 0} \pi(S \cap A^n) z^n \).

• page 102, line 4: The algorithm giving the factorization in Lyndon words (Algorithm LYONDFACTORIZATION) is due to Duval (1983) (see also [2, Exercise 106]). It is related with an algorithm of Fredricksen and Maiorana (1978) for the generation of Lyndon words (see [2] and [1] for further information).

References
