Errata for

Bayesian Networks and Influence Diagrams: A Guide to Construction and Analysis

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p. 44, Sec. 3.3.1: "The conditional probability distribution $P(X|Y)$..." should be "The conditional probability distribution $P(Y|X)$..."

p. 49: $\eta\left(\sum_Y \ldots\right)$ should be $\eta\left(P(X)\sum_Y \ldots\right)$

p. 59, l. 4: $\mathrm{nd}(X_\nu)$ should be $X_{\mathrm{nd}(\nu)}$

p. 101, Fig. 4.23: The arc (R_i, H_{i+1}) should be (D_i, H_{i+1})

p. 109, 1st eqn.: U should be $\mathcal{X}$

p. 109: For clarity, X_i and X_j should be X_{ν_i} and X_{ν_j}, respectively.

p. 126:

$$MEU(\hat{\Delta}) = \max_T \sum_S \max_D \sum_O P(O)P(S|O,T)(C(T) + U(D,O)$$

should be

$$MEU(\hat{\Delta}) = \max_T \sum_S \max_D \sum_O P(O)P(S|O,T)(U_1(T) + U_2(D,O)$$

p. 139, Ex. 5.5: (c) should be (b)

p. 156, Ex. 6.10: "known" should be "know"

p. 186, 4th par.: "subsets" should be "subset"

p. 190, l. 1: "why" should be "while"

p. 207:

$$P(E = \mathsf{true}|X_1 = x_1, \ldots, X_n = x_n, \Theta_E) = 1 - \theta_0 \prod_{X_i = \mathsf{true}} \theta_i,$$

where θ_0 is the default inhibitor, θ_i is the inhibitor for X_i, and $\Theta_E = \{\theta_0, \theta_1, \ldots, \theta_n\}$. From this it follows that

$$P(E = \mathsf{false}|E_1 = x_1, \ldots, E_n = x_n, \Theta_E) = \theta_0 \prod_{E_i = \mathsf{true}} \theta_i.$$

should be

$$P(E = \mathsf{true}|C_1 = c_1, \ldots, C_n = c_n, \Theta_E) = 1 - \theta_0 \prod_{C_i = \mathsf{true}} \theta_i,$$

where θ_0 is the default inhibitor, θ_i is the inhibitor for C_i, and $\Theta_E = \{\theta_0, \theta_1, \ldots, \theta_n\}$. From this it follows that

$$P(E = \mathsf{false}|C_1 = c_1, \ldots, C_n = c_n, \Theta_E) = \theta_0 \prod_{C_i = \mathsf{true}} \theta_i.$$

p. 215, item (3): D should be T

p. 223, Ex. 7.20: "cost of" should be "cost"

p. 224, Table 7.22: "keep" should be "don't sell"

p. 230: $2^{i(n-1)}$ should be $2^{i(n-i)}$

p. 255, Ex. 8.1: The first part of the exercise should read: Let variables A, C, F, S, and T represent angina, cold, fever, spots in throat, and sore throat, respectively. Assume that the following set of conditional pairwise independence statements have resulted from performing statistical independence tests on this set of variables:

$$\mathcal{M}_{\perp\!\!\!\perp} = \Big\{ A \perp\!\!\!\perp C \,|\, \{\}, C \perp\!\!\!\perp S \,|\, \{\}, F \perp\!\!\!\perp S \,|\, \{A\}, T \perp\!\!\!\perp S \,|\, \{A\}, T \perp\!\!\!\perp F \,|\, \{A, C\} \Big\}.$$

p. 256, Ex. 8.3: All variables are assumed to be binary.

p. 263, l. 3: "where ε_i and ε_j" should be "where ε_i and ε_j are two pieces of evidence"

p. 264, Ex. 9.3: $\varepsilon_{DS} = \{\varepsilon_S, \varepsilon_X\}$ should be $\varepsilon_{SX} = \{\varepsilon_S, \varepsilon_X\}$

p. 265, Ex. 9.4: $\varepsilon_{DX} = \{\varepsilon_D, \varepsilon_X\} = -0.04$ should be $\mathrm{conf}(\varepsilon_{DX}) = \mathrm{conf}(\{\varepsilon_D, \varepsilon_X\}) = -0.04$ and $\varepsilon_{DS} = \{\varepsilon_S, \varepsilon_X\} = -0.06$ should be $\mathrm{conf}(\varepsilon_{SX}) = \mathrm{conf}(\{\varepsilon_S, \varepsilon_X\}) = -0.06$

p. 267: "The *cost-of-omission* $c(P(X \,|\, \varepsilon), P(X \,|\, \varepsilon \setminus \{\varepsilon_i\}))$ of ε_i is defined as" should be "Suermondt (1992) defines the *cost-of-omission* $c(P(X \,|\, \varepsilon), P(X \,|\, \varepsilon \setminus \{\varepsilon_i\}))$ of ε_i as"

p. 269: To answer exercises in Chapter 9, the conditional probability distribution $P(W \,|\, A)$ is needed

W	$A = \text{yes}$	$E = \text{no}$
yes	0.35	0.01
no	0.65	0.99

p. 283, l. 7: $P(X = x' \,|\, \ldots)$ should be $P(X \,|\, \ldots)$.

p. 283, Ex. 10.8: The example should read: Assume that the variable Dry has three states, no, dry and very dry, with a prior distribution $P(\text{Dry}) = (0.9, 0.08, 0.02)$. Let $S = (\text{Dry}, \text{no}, \{\text{Loses} = \text{yes}\})$ be the scenario under consideration. If we want to investigate the impact of adjusting the parameter $P(\text{Dry} = \text{no}) = 0.9$ to 0.875, then it is necessary to adjust the values of the other two parameters such that all three adjusted parameters sum to one. This is achieved by proportional scaling such that the adjusted prior distribution becomes

$$\begin{aligned} P(\text{Dry}) &= \left(0.875, \frac{0.08 \cdot (1 - 0.875)}{0.08 + 0.02}, \frac{0.02 \cdot (1 - 0.875)}{0.08 + 0.02}\right) \\ &= (0.875, 0.1, 0.025). \end{aligned}$$

When a variable has only two states a change in the value of one parameter must induce a similar (but opposite) change in the other parameter.

p. 285, 1st eqn.: The equation should be

$$f'(t) = \frac{\alpha \cdot \delta - \beta \cdot \gamma}{(\gamma \cdot t + \delta)^2}.$$

p. 286, mid: "min($0, t_0 - r$) to max($1, t_0 + s$)" should be "max($0, t_0 - r$) to min($1, t_0 + s$)"

p. 286, mid: "(Laskey 1993)" should be "(van der Gaag & Renooij 2001)"

p. 287, mid: "$(0.0967, \infty)$" should be "$(-0.0967, \infty)$"

p. 288, Ex. 10.1: "$\mathsf{P(Rain)} = \mathsf{P(Sprinkler)} = (0.1, 0.9)$" should be "$\mathsf{P(Rain = no)} = \mathsf{P(Sprinkler = no)} = 0.9$"

p. 289, Tab. 10.8–9: The probability of the combination $(\mathsf{yes}, \mathsf{dry})$ should be 0.01.

p. 302, Ex. 11.3: d_{11} and d_{12} in the table for $U(A, D_2)$ should be d_{21} and d_{22}.