Probability Bracket Notation, Multivariable Systems and Bayesian Networks

Errata

September 6, 2012

§2.1. Eq. (2.1.9) on Page 5:

Original:

\[
E[F(X) | H] = P(H | F(X) | \Omega) = P(H | F(X)I_X | \Omega)
\]

\[
= \sum_{x \in \Omega} P(H | x)F(x)P(x | \Omega) = \sum_{x \in H} P(x)F(x)
\]

Corrected:

\[
E[F(X) | H] = P(\Omega | F(X) | H) = P(\Omega | F(X)I_X | H)
\]

\[
= \sum_{x \in \Omega} P(\Omega | x)F(x)P(x | H) = \sum_{x \in H} F(x)P(x | H)
\]

\[
= \sum_{x \in H} F(x)\frac{P(x \cap H)}{P(H)} = \sum_{x \in H} F(x)\frac{P(x)}{P(H)} = \frac{1}{\sum_{x \in H} P(x)} \sum_{x \in H} F(x)P(x)
\] (2.1.9)

§2.2. Eq. (2.2.8) on Page 6:

Original:

\[
E[F(X, Y) | H] = P(H | F(X, Y) | \Omega) = P(H | F(X, Y)I_{X,Y} | \Omega)
\]

\[
= \sum_{x \in \Omega} P(H | x, y)F(x, y)P(x, y | \Omega) = \sum_{x, y \in H} P(x, y)F(x, y)
\]

Corrected:

\[
E[F(X, Y) | H] = P(\Omega | F(X, Y) | H) = P(\Omega | F(X, Y)I_{X,Y} | H)
\]

\[
= \sum_{x \in \Omega} P(\Omega | x, y)F(x, y)P(x, y | H) = \sum_{(x, y) \in H} F(x, y)P(x, y | H)
\] (2.2.8)