

Errata for *Uncertain Inference*
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l denotes lines from the bottom, L denotes lines from the top.

- p.xi l-8 “the event” for “this event”
- p.xi l-7 “first order logic is” for “this is”
- p.10 L-6 “decision making” for “decisionmaking”
- p.28 L-10 “and, derivatively,” for “and derivatively”
- p.34 L-26 “yields” for “yield”
- p.35 L-13 delete “valid”
- p.51 l-16 “contexts. To make the replacement here, we must know $\mathcal{P}(A) > 0$ ” for “contexts. What”
- p.51 l-15 “think” for “to think”
- p.55 l-0 The values on the vertical axis should be represented with the same number of decimal places.
- p.66 delete problem 21.
- p.66 l-3 “A pair of dice are rolled n times.” for “Two dice are rolled.”
- p.67 L-21 “ X ” for “ X^3 ”
- p.67 L-22 “ $f_{X,Y}$ ” for “ $F_{X,Y}$ ”
- p.72 L-21 “an infinite sequence” for “infinite sequences”
- p.75 L-5 “probabilities represent” for “probability represents”
- p.75 L-11 “his” for “this”
- p.77 L-24 “be referred to as the” for “be the”
- p.79 L-18 “roll” for “die”
- p.80 l-2 “greater than” for “greater”
- p.81 **end of fourth full paragraph** insert footnote: “This means that $\mathbf{c}(h, e)$ is defined only when $\mathbf{m}(e) > 0$. There are drawbacks to this reduction.”
- p.83 l-6 “to be like” for “should be like”
- p.89 L-6 “Conditioning” for “Conditionalization”
- p.89 L-12-13 “conditioning” for “conditionalization”
- p.89 L-14-15 “conditioning” for “conditionalization”
- p.89 L-20 “conditioning” for “conditionalization”
- p.90 L-10 “conditioning” for “conditionalization”
- p.90 L-21 “worth while” for “worthwhile”

- p.93 L-19 “conditioning” for “conditionalization”
- p.93 L-20 “conditioning” for “conditionalization”
- p.103 l-13 delete “, as opposed to confirmation”
- p.105 L-8 “algebra” for “field”
- p.115 l-19 “to prove Theorem 5.14” for “to show that Example 10.1 works.”
- p.118 L-9 “conclusion” for “deduction”
- p.118 L-20 “Formally,” for “Formally”
- p.120 L-7 “like is not” for “like are not”
- p.121 L-6 “may not have much effect on” for “may have no effect on”
- p.125 l-14 “by requiring $\Gamma(E)$ to be” for “by requiring that $\Gamma(E)$ be”
- p.125 l-10 delete “(deductively)”
- p.132 l-2 “usable(leftarm)” should be on one line.
- p.135 l-16 “**K, T, 5**” for “**K, T, 4, 5**”
- p.135 footnote “deducible from the other axioms in **S5**” for “deducible from the **5**-axiom”
- p.136 L-4 set “intermediate” roman.
- p.136 L-7 “Euclidean” for “euclidean”
- p.136 L-8 “Euclidean” for “euclidean”
- p.136 l-5 center line
- p.140 l-4 “Formulas in this normal” for “Formulas in normal”
- p.145 L-12 “Together with the original premise set A ” for “Together with the original premises A ”
- p.145 l-4 “the expanded theory” for “the extended theory”
- p.146 L-12 “schemata” for “formulas”
- p.147 L-8 “no known algorithm” for “no algorithm”
- p.147 L-15 “ β_i ” for “ β ”
- p.147 L-16 “ β_i ” for “ β ”
- p.147 L-17 “ β_i ” for “ β ”
- p.156 L-16 “expansion” for “such as expansion”
- p.169 l-8 “all the reasons” for “all of the reasons”
- p.171 l-14 “with” for “about”

- p.171 l-12 “the changed theory” for “the changed theories”
- p.172 L-3 “construed as” for “construed as the”
- p.179 L-5 “has (or had) a” for “has a”
- p.179 L-10 “represent” for “provide”
- p.179 l-4 “i’th” for “i th”
- p.183 L-4 “this last is” for “this is”
- p.183 L-8 “ \geq ” for “ $<$ ”
- p.183 L-12 “impossible without prior probabilities” for “impossible”
- p.183 L-17 “must accept” for “accept”
- p.183 l-19 “the 70% hypothesis — the alternative” for “the 70% hypothesis”
- p.184 L-3 “The probability of Type” for “Type”
- p.184 L-5 “The probability of Type” for “Type”
- p.186 l-3 “in the sample” for “in it”
- p.189 footnote 4 “frequency probabilities” for “frequency distributions”
- p.192 L-11 “circumscribed” for “bounded”
- p.194 l-10 “conditioning” for “conditionalization”
- p.194 l-8 “conditioning” for “conditionalization”
- p.194 l-7 “replace” for “scrap”
- p.196 L-9 “the next thousand” for “a long sequence of”
- p.197 L-8 “[Lehman, 1986]” for “[Lehman, 1959]”
- p.197 L-13 “0.05” for “0.5”
- p.199 L-3 “Springer, Berlin, 1986” for “Wylie, New York, 1959”
- p.202 L-23 “unexamined emerald” for “emerald”
- p.203 L-12 “the sets of models” for “the models”
- p.204 L-8 “quasi-statistical” for “quasistatistical”
- p.204 l-13 “condition” for “conditionalize”
- p.205 L-15 “ ρ ” for “ R ”
- p.205 L-16 “ τ ” for “ T ”
- p.208 l-1 delete “what we shall call”
- p.209 Definition 9.10 should have the following form; it would be better if the corners around the last part of the formula were raised:

Definition 9.10

$$\mathcal{T}_4(\rho) = \left\{ \tau : \rho \in \mathcal{R} \wedge \right. \\ \left. \exists \tau', b(\tau' \in \mathcal{T}_1 \cup \mathcal{T}_2 \cup \mathcal{T}_3 \wedge b \in \text{Borel set} \wedge \right. \\ \left. \tau = \frac{\ulcorner \{x:\tau'(x) \wedge \rho(x)\} \urcorner}{\{x:\rho(x)\}} \in b \urcorner \right\}$$

p.209 l-12 “conditioning” for “conditionalization”

p.211 L-21 “true or false” for “true or not”

p.211 Definition 9.12 the second line should be indented:

$$\text{Definition 9.12 } \Delta(S, \Gamma) = \left\{ \sigma : \exists p, q, \alpha, \tau, \rho, \bar{\eta}(\ulcorner \rho(\alpha) \urcorner \in \Gamma \wedge \right. \\ \left. \ulcorner S \equiv \tau(\alpha) \urcorner \in \Gamma \wedge \sigma = \ulcorner \% \bar{\eta}(\tau, \rho, p, q) \urcorner \right\}$$

p.211 Definition 9.13 the second and third lines should be indented; connectives should end lines rather than beginning them:

$$\text{Definition 9.13 (Support)} \text{ Support}(\Delta, S, \Gamma, \alpha, \tau, \rho) = [p, q] \text{ if and only if} \\ \ulcorner \% \bar{\eta}(\tau, \rho, p, q) \urcorner \in \Delta \wedge \Delta \subseteq \Delta(S, \Gamma) \wedge \forall p', q'(\ulcorner \% \bar{\eta}(\tau, \rho, p', q') \urcorner \in \Delta \supset \\ [p, q] \subseteq [p', q']) \wedge \ulcorner \rho(\alpha) \urcorner \in \Gamma \wedge \\ \ulcorner S \equiv \tau(\alpha) \urcorner \in \Gamma.$$

p.212 L-9 “more detailed statistical” for “more statistical”

p.212 L-10 “less detailed statistical” for “less statistical”

p.212 L-19 “[0.930,0.975]” for “[0.930,0.965]”

p.213 Definition 9.15 indent second and third lines; connective should end line:

$$\text{Definition 9.15 } \Delta_1 \text{ sharpens-by-precision } \Delta_2 \text{ in the context } S, \Gamma \text{ if and only if} \\ \Delta_2 \subset \Delta(S, \Gamma) \wedge \exists p', q', \alpha', \tau', \rho', \bar{\eta}(\Delta_1 = \Delta_2 - \{\ulcorner \% \bar{\eta}(\tau', \rho', p', q') \urcorner\}) \wedge \\ \forall \alpha, \tau, \rho(\text{Support}(\Delta_1, S, \Gamma, \alpha, \tau, \rho) \subseteq [p', q'])$$

p.213 Definition 9.16; indent second line; break after connective:

$$\text{Definition 9.16 } Pr(\Delta, S, \Gamma) = \left\{ \ulcorner \% \bar{\eta}(\tau, \rho, p, q) \urcorner : \ulcorner \% \bar{\eta}(\tau, \rho, p, q) \urcorner \in \Delta \wedge \right. \\ \left. \neg \exists \Delta'(\Delta' \text{ sharpens-by-precision } \Delta \text{ in the context } S, \Gamma) \right\}$$

p.214 l-13 “ $US(x) \wedge PE(x)$ ” for “ $US(x) \wedge F(x) \wedge PE(x)$ ”

p.215 l-11 “ s_4 ” for “ s_2 ”

p.215 l-9 “ s_2 ” for “ s_4 ”

p.215 Theorem 9.2 rearrange thus:

Theorem 9.2 $\forall \Delta' (\neg \Delta' \text{ sharpens-by-specificity } \Delta \text{ in the context } S, \Gamma) \supset$
 $\forall \rho', \rho, \alpha, \tau (\ulcorner \forall \bar{\eta} (\rho' \supset \rho) \urcorner \in \Gamma \supset$
 $\neg \text{Support}(S, \Delta, \Gamma, \alpha, \tau, \rho) \# \text{Support}(S, \Delta, \Gamma, \alpha, \tau, \rho'))$

p.216 L-2 “any inclusion chain” for “any chain”

p.216 L18,19 delete “Bl*($\langle x, y \rangle$) is the set of experiments in which the ball ultimately chosen is black;”

p.216 L-21 “Bl(y)” for “Bl*($\langle x, y \rangle$)”

p.216 L-24 delete “Bl*($\langle u, b \rangle$) \equiv Bl(b)”

p.216 L-27 “Bl(y)” for “Bl*($\langle x, y \rangle$)”

p.217 Definition 9.19 rearrange, replacing p by ρ''

Definition 9.19 Δ_1 sharpens-by-richness Δ_2 in the context S, Γ iff
 $\Delta_2 \subseteq \Delta(S, \Gamma) \wedge \exists \bar{\eta}, \alpha', \tau', \rho', p', q' (\Delta_1 = \Delta_2 - \{ \ulcorner \% \bar{\eta} (\tau', \rho', p', q') \urcorner \}) \wedge$
 $\exists \alpha, \tau, \rho (\text{Support}(S, \Delta_1, \Gamma, \alpha, \tau, \rho) \# [p', q'] \wedge \exists \rho'' (\ulcorner \forall \bar{\eta}, \bar{\eta}' (\rho(\bar{\eta}, \bar{\eta}') \supset \rho'(\bar{\eta})) \wedge$
 $\rho''(\bar{\eta}') \urcorner \in \Gamma) \wedge \forall \rho_1 (\ulcorner \forall \bar{\eta}, \bar{\eta}' (\rho_1(\bar{\eta}, \bar{\eta}') \supset \rho_1(\bar{\eta}) \wedge \rho(\bar{\eta}')) \urcorner \in \Gamma) \supset$
 $\neg \exists \alpha'', \tau'' (\text{Support}(S, \Delta_1, \Gamma, \alpha'', \tau'', \rho_1) \# \text{Support}(S, \Delta_1, \Gamma, \alpha, \tau, \rho)))$

p.217 L-18 “Bl(y)” for “Bl*($\langle x, y \rangle$)”

p.217 L-20 “[$\frac{9}{25}, \frac{9}{25}$]# [0.4, 0.4]” for “it is not the case that [$\frac{9}{25}, \frac{9}{25}$] \subseteq [0.4, 0.4]”

p.217 L-22 “and” for “but”

p.217 L-25 “joint” for “marginal”

p.217 Theorem 9.3 rearrange connectives:

Theorem 9.3 $\forall \Delta' (\neg \Delta' \text{ sharpens-by-richness } \Delta \text{ in the context } S, \Gamma) \supset$
 $\forall \rho, \rho', \rho'', \alpha, \alpha', \tau, \tau' (\ulcorner \forall \bar{\eta}, \bar{\eta}' (\rho'(\bar{\eta}, \bar{\eta}') \supset \rho''(\bar{\eta})) \wedge \rho(\bar{\eta}') \urcorner \in \Gamma \supset$
 $\neg \text{Support}(S, \Delta, \Gamma, \alpha, \tau, \rho) \# \text{Support}(S, \Delta, \Gamma, \alpha', \tau', \rho'))$

p.217 Definition 9.20 move connective, thus:

Definition 9.20 $Ri(\Delta, S, \Gamma) = \{ \ulcorner \% \bar{\eta} (\tau, \rho, p, q) \urcorner : \ulcorner \% \bar{\eta} (\tau, \rho, p, q) \urcorner \in \Delta \wedge$
 $\neg \exists \Delta' (\Delta' \text{ sharpens-by-richness } \Delta \text{ in the context } S, \Gamma) \}$

p.218 Definition 9.21 move connectives, thus:

Definition 9.21 Δ_1 sharpens Δ_2 in the context S, Γ iff

$$\begin{aligned} & \exists \bar{\eta}, \alpha, \tau, \rho, p, q (\text{Support}(\Delta_2, S, \Gamma, \alpha, \tau, \rho) = [p, q] \wedge \\ & \neg \text{Support}(\Delta_1, S, \Gamma, \alpha, \tau, \rho) = [p, q]) \supset \\ \exists \Delta (\Delta_1 \subset \Delta \subset \Delta_2 \wedge & \left(\begin{array}{l} \Delta \text{ sharpens-by-precision } \Delta_2 \text{ in the context } S, \Gamma \vee \\ \Delta \text{ sharpens-by-specificity } \Delta_2 \text{ in the context } S, \Gamma \vee \\ \Delta \text{ sharpens-by-richness } \Delta_2 \text{ in the context } S, \Gamma \end{array} \right) \end{aligned}$$

p.218 Theorem 9.4

Theorem 9.4 $Pr(Sp(Ri(\Delta(S, \Gamma))))$ cannot be sharpened in the context S, Γ

p.218 Theorem 9.5 CHANGE:

Theorem 9.5 If $\Delta \subseteq \Delta(S, \Gamma)$ and $\ulcorner \% \bar{\eta}(\tau, \rho, p, q) \urcorner \in \Delta$ and

$$\begin{aligned} & \forall \rho' (\ulcorner \bar{\eta}(\rho' \supset \rho) \urcorner \in \Gamma \supset \forall \alpha, \tau, \neg \text{Support}(\Delta, S, \Gamma, \alpha, \tau, \rho') \# [p, q]) \text{ then} \\ & \% \bar{\eta}(\tau, \rho, p, q) \urcorner \in Sp(\Delta) \end{aligned}$$

p.219 Definition 9.22 rearrange connectives; delete a stray “S”; use big parens for clarity:

Definition 9.22 $\Gamma \vdash_{[p,q]} S$ iff

$$\exists \Delta \left(\begin{array}{l} p = \min\{t : \exists u, \alpha, \tau, \rho (\text{Support}(\Delta, S, \Gamma, \alpha, \tau, \rho) = [t, u])\} \wedge \\ q = \max\{u : \exists t, \alpha, \tau, \rho (\text{Support}(\Delta, S, \Gamma, \alpha, \tau, \rho) = [t, u])\} \wedge \\ \forall \Delta' (\neg \Delta' \text{ sharpens } \Delta \text{ in the context } S, \Gamma \wedge \\ (\exists \alpha, \tau, \rho (\text{Support}(\Delta', S, \Gamma, \alpha, \tau, \rho) \# [p, s]) \supset \\ \Delta \text{ sharpens } \Delta' \text{ in the context } S, \Gamma) \end{array} \right)$$

p.219 l-6 delete “, but at the cost of arbitrariness”

p. 220, L-6 “ $\exists \alpha, \tau, \rho$ ” for “ $\exists \alpha, \tau \rho$ ”

p. 220, L-7 “ $\exists \alpha, \tau, \rho$ ” for “ $\exists \alpha, \tau \rho$ ”

p.230 l-5 “intelligence, default” for “intelligence default”

p.234 L-16 “ $p \leq |SS_{m,v}(\ulcorner \tau \wedge \rho \urcorner)[\bar{\eta}_1]| / |SS_{m,v}(\rho)[\bar{\eta}_1]| \leq q$ ” for “ $p \leq SS_{m,v}[\bar{\eta}_1] \ulcorner \tau \wedge \rho \urcorner / SS_{m,v}[\bar{\eta}_1] \rho \leq q$ ”

p.235 L-10 “the model” for “a model”

p.236 L-22 delete “be”

p.237 Definition 10.9 primes missing

Definition 10.9 (Support Set) $\Lambda_i(S, \Gamma, \mathcal{D}) = \{m : \exists p, q (\models_m^\ulcorner S \equiv \tau_i(\alpha_i) \wedge \rho_i(\alpha_i) \wedge \% \bar{\eta}(\tau_i, \rho_i, p, q) \urcorner \wedge \forall p', q' (\models_m^\ulcorner \% \bar{\eta}(\tau_i, \rho_i, p', q') \urcorner \supset p \geq p' \wedge q \leq q'))\}$

p.238 Definition 10.12 rearrange (and mistakes)

Definition 10.12 (Marginality) $M(\Lambda_i, \Theta)$ if and only if Θ is a set of support sets and $\exists j, k(\Lambda_j, \Lambda_k \in \Theta \wedge \Gamma \models^\Gamma \forall \bar{\eta}, \bar{\eta}'(\rho_j(\bar{\eta}, \bar{\eta}') \supset \rho_i(\bar{\eta}) \wedge \rho_k(\bar{\eta}'))^\neg \wedge$
 $r_{\mathcal{M}_{\mathcal{D}}(\Lambda_i)}(\tau_i, \rho_i) \# r_{\mathcal{M}_{\mathcal{D}}(\Lambda_j)}(\tau_j, \rho_j) \wedge \forall j', k'[\Lambda_{j'}, \Lambda_{k'} \in \Theta \wedge$
 $\Gamma \models^\Gamma \forall \bar{\eta}, \bar{\eta}'(\rho_{j'}(\bar{\eta}, \bar{\eta}') \supset \rho_j(\bar{\eta}) \wedge \rho_{k'}(\bar{\eta}'))^\neg \supset$
 $\neg r_{\mathcal{M}_{\mathcal{D}}(\Lambda_i)}(\tau_{j'}, \rho_{j'}) \# r_{\mathcal{M}_{\mathcal{D}}(\Lambda_j)}(\tau_j, \rho_j)]$

p.239 Definition 10.13 omitted clause:

Definition 10.13 (Relevant Support Sets) $\Theta_{\mathcal{D}}(S, \Gamma) = \{\Lambda_j(S, \Gamma, \mathcal{D}) : (\exists \Theta)(\forall i)(\Lambda_i \in \theta \equiv (\neg(W(\Lambda_i, \Theta) \wedge \neg G(\Lambda_i, \Theta) \wedge \Lambda_i \in \Theta \wedge \neg M(\Lambda_i, \Theta)))\}$

p.239 l-21 delete “will be said to”

p.240 l-5 “the partial” for “partial”

p.240, l-3 Definition 10.14

Definition 10.14 $\Gamma \models_{[p,q]} S$ iff
 $p = \min\{r_{\mathcal{M}_{\mathcal{D}}}(\tau_i, \rho_i) : \Lambda_i \in \Theta_{\mathcal{D}}(S, \Gamma)\} \wedge$
 $q = \max\{r_{\mathcal{M}_{\mathcal{D}}}(\tau_i, \rho_i) : \Lambda_i \in \Theta_{\mathcal{D}}(S, \Gamma)\}$

p.241 l-13 “ $\Theta_{\mathcal{D}}(S, \Gamma)$ ” for “ $\Lambda(S, \Gamma)$ ”

p.242 L-3 “the” for “a”

p.242 L-4 “10.13” for “10.14”

p.244 L-13 “nonempty domain” for “domain”

p.247 L-8 “subintervals of [0,1]” for “of [0,1]”

p.248 L-16 “in computer” for “computer”

p.251 l-7 “ $\Theta_{\mathcal{D}}(4\text{-up}(t), \Gamma)$ ” for “ $\Theta_{\mathcal{D}}(2\text{-up}(t), \Gamma)$ ”

p.252 l-14,13 “0.987, 0.991” for “0.990,0.994”

p.253 close up the space in lines 13 – 17; the formula

“ $\{m : m \models \{“47\text{-year-old-male}(Mark)” , “\%x(survive-12\text{-months}(x), 47\text{-year-old-male}(x) \wedge \text{white-collar}(x), 0.990, 0.994)”\}\}$ ” should be embedded.

p. 255 l-5 The formula should be

$$\frac{|SS_m(P(x) \wedge Q(x))|}{|SS_m(Q(x))|} = F(P, Q).$$

- p.257 L-6** “*constrained*” for the second occurrence of “constrained”
- p.257 Lemma 11.4** replace two occurrences of “ δ ” by occurrences of “d”
- p.258 L-2** “ $j'f_{j'}(\langle a_1, \dots, a_{j'} \rangle)$ ” for “ $j'f_{j'}\langle a_1, \dots, a_{j'} \rangle$ ”
- p.258 equation 11.2** replace “ δ ” by “d”
- p.262 L-10** “corresponds” for “corresponding”
- p.262 L-12** “. It simply” for “, simply”
- p.262 l-17** “ditioning” for “ditionalization”
- p.263 l-21-20** “conditioning” for “conditionalization”
- p.263 l-1** “conditioning” for “conditionalization”
- p.264 L-4** “conditioning” for “conditionalization”
- p.264 L-6** “conditioning” for “conditionalization”
- p.264 L-** “*conflict*” for “conflict”
- p.264 L-7** “conditioning” for “conditionalization”, “conditioning” for “conditionalization”
- p.273 L-3** “ ϵ ” for “p”
- p.276 L-20** delete “reflexive, and asymmetric,”
- p.286 L-14** “fragile and baroque, although generally reliable, process” for “fragile, although generally reliable, baroque process”