Logic: Errata

Chapter "Why Logic is Good For You"

- page 3, "the the Nelson-Oppen" → "the Nelson-Oppen"
- page 3, "If two theories [...]. Then also [...]" → "If two theories T_1, T_2 fulfil certain conditions and it is known that satisfiability of quantifier-free formulas with respect to the theories T_1 and T_2 is decidable, then satisfiability of quantifier-free formulas with respect to the union $T_1 \cup T_2$ is decidable."
- page 4, "as a unique model" → "has a unique model"
- page 5, "bad should happy" → "bad should happen"

Chapter "Propositional Logic"

- page 8, "We write $\vdash A$ instead of $\varnothing \vdash A$ and call the formula A *valid* in this case." → "We write $\vdash A$ instead of $\varnothing \vdash A$ and call the formula A *provable* in this case."
- page 10, "A formula F is in said to be in *conjunctive normal form*" → "A formula F is said to be in *conjunctive normal form*"
- page 11, "otherwise it is $\mathcal{C}$ is said to be *inconsistent*" → "otherwise $\mathcal{C}$ is said to be *inconsistent*"
- page 11, Thm. 2.3, "propositional axioms" → "propositional atoms"

Chapter "Syntax and Semantics of First-Order Logic"

- page 21, "The input x of M" → "The input x of M such that the length of x is n,"
- page 24, "then m is called an *isomorphism*" → "Then m is called an *isomorphism*"
- page 26, "Define a two formulas F and G, such that $F \not\models G$ holds and $F \not\models \neg G$ holds" → "Define two formulas F and G, such that $F \not\models G$ holds and $F \not\models \neg G$ holds"

Chapter "Soundness and Completeness of First-Order Logic"

- page 31, "In we obtain $\mathcal{J} \models \mathcal{G}$" → "In sum we obtain $\mathcal{J} \models \mathcal{G}$"
- page 32, "We have to prove that either every finite subset of $\mathcal{G} \cup \{E\}$ is in S or every finite subset of $\mathcal{G} \cup \{F\}$ is in S. As this would imply that either $\mathcal{G} \cup \{E\} \in S^*$ or $\mathcal{G} \cup \{F\} \in S^*$" → "We have to prove that either every finite subset of $\mathcal{G} \cup \{E\}$ is in S or every finite subset of $\mathcal{G} \cup \{F\}$ is in S, as this would imply that either $\mathcal{G} \cup \{E\} \in S^*$ or $\mathcal{G} \cup \{F\} \in S^*$."
- page 37, "call the formula A *valid* in this case" → "call the formula A *provable* in this case"

Chapter "Extensions of First-Order Logic"

- page 46, "there exists exists a path" → "exists a path"

Chapter "Normal Forms and Herbrand's Theorem"

- page 50, "Each step performed will preserves logical equivalence of formulas." → "Each step performed preserves logical equivalence of formulas."
- page 53, add "A term t is called *closed* or *ground*, if t does not contain (free) variables."
- page 53, "the $\mathcal{I}$" → "the interpretation $\mathcal{I}$"
- page 54, "the negation of this conjunction D" → "the negation of this conjunction C"
- page 56, "$\mathcal{I} \not\models G$" → "$\mathcal{I} \not\models F'$"
- page 58, "Let $\mathcal{G}_2 = \{\mathsf{P}(\mathsf{c}), \neg\mathsf{P}(x)\}$" → "Let $\mathcal{G}_2 = \{\mathsf{P}(\mathsf{c}), \neg\mathsf{P}(a)\}$"

Chapter "Automated Reasoning with Equality"

- page 61, the following definition is missing: "An equality problem $E = x_1 \stackrel{?}{=} v_1, \ldots, x_n \stackrel{?}{=} v_n$ in solved form *induces* the substitution $\sigma_E := \{x_1 \mapsto v_1, \ldots, x_n \mapsto v_n\}$."
- page 61, "σ'_E" → "$\sigma_{E'}$"
- page 62, "terminated" → "terminates"

- page 62, Definition 8.4: The definition of $\mathsf{Res}(\mathcal{C})$ should read:

  $\mathsf{Res}(\mathcal{C}) = \{D \mid D$ is conclusion of an inference in Figure 8.2 with premises in $\mathcal{C}\} \cup \mathcal{C}$

  The same mistake occurs in Def. 8.6, 8.7, Def. 8.8, and Def. 8.9.

- page 63, "More" → "Moreover"

- page 63, "We only sketch the proof of the next theorem" → "We only sketch the proof of the theorem"

- page 63, "the derivation is D" → "the derivation D"

- page 67, the paramodulation rules should have been:

  $$\frac{C \vee s \neq s'}{C\sigma'} \qquad \frac{C \vee s = t \quad D \vee L[s']}{(C \vee D \vee L[t])\sigma'}$$

  similar for ordered paramodulation.

- page 69, "In order to show show completeness" → "In order to show completeness"

- page 69, "For that we show that the set of consistent set of ground clauses fulfils the satisfaction properties we need to take into account" → "For that we need to take into account"

- page 70, change the paramodulation rules as above and "$D[t]\sigma$ is maximal with respect to $D[t]\sigma'$" → "$L[t]\sigma$ is maximal with respect to $D\sigma'$"

Chapter "Issues of Security"

- page 73, "Neumann-Stubblebinde" → "Neuman-Stubblebinde"

- page 77, "the firs of the message" → "the first of the message"

- page 77, Predicates $\mathsf{Store_a}$, $\mathsf{Store_b}$ are missing in the definition of the language of $\mathcal{L}$. "The last predicate (Nonce) denotes that its argument is a nonce." → "The predicate Nonce denotes that its argument is a nonce and the predicates $\mathsf{Store_a}$, $\mathsf{Store_b}$ denote information that is in the store of Alice or Bob."

- page 77, "We collect these 12 sentences" → "We collect these 15 sentences"

- page 78, "$\forall u \forall v\, ((\mathsf{Im}(u) \wedge \mathsf{P}(v)) \rightarrow \mathsf{Ik}(\mathsf{key}(v, w)))$" → "$\forall u \forall v\, ((\mathsf{Im}(u) \wedge \mathsf{P}(v)) \rightarrow \mathsf{Ik}(\mathsf{key}(u, v)))$"