1 Ben Sela

1.1 Chapter 7-NP-HARDNESS VIA 3PARTITION

1. Bottom of page 207: An extra period right after Theorem 7.7.9.

2. On page 182 in the definition of 3PARTITION, I am confused about the parenthetical comment saying *Henceforth abbreviated 3PARTITION.* As far as I can tell it has been referred to as 3PARTITION throughout the entire chapter up to this point so I am not sure what 3PARTITION is an abbreviation of.

3. At the bottom of page 186 in the proof of Theorem 7.4.2, the second sentence says *See* and then cuts off. I think it was supposed to be something like *See figure 7.6.*

1.2 Chapter 12-NPH VIA CONST LOGIC

There are multiple instances where a figure in chapter 15 is referenced. It seems these figures are always identical to some figure in chapter 12, but I assume the intent was to reference the versions appearing in chapter 12. A list of the errors I found are below.

1. Bot page 303 ref figure 15.1 but should reference fig 12.1

2. Halfway down page 304, it says *See Figure 15.1* but should ref 12.1

3. Bot of page 304 it says *see figure 15.2* but should ref 12.2.

4. Bot half of page 305, the CHOICE vertex definition references figure 15.3 but should reference figure 12.3
2 George Li

2.1 Chapter 8-Param

1. Page 279. Before Def 11.4.1 and after Def 11.4.2 we define degree, so we define it twice.

2. Sec 8.2. Before that section the second bullet point should be $2^{o(\sqrt{k})}$.

3. Sec 8.2 (around there). show and showed. Both should be past tense.

4. Chen et al result on $VC_k$. Book has 1.28$^k$, paper says 1.2738$^k$.

5. Section 8.6. A configuration is an elements of Should be element

6. The red and blue picture. There is some missing work here. And $d$ isn’t defined.

7. Right before section 8.6.3. Covers should be Cover IS on regular graphs is $W[1]$ complete needs a period at the end.

8. Chapter 8. Theorem 8.7.6 begins with The proof that DOM is in $W[1]$ is easy and omitted. Is it really IN $W[1]$- check that.

9. Chapter 8. Def 8.9.2. Second point is garabled. Should be if there is, for all $d$, a reduction from $C[t,d]$ to $A$

2.2 Chapter 11-inapprox and 19-Online Algs

1. Page 279. Before Def 11.4.1 and after Def 11.4.2 we define degree, so we define it twice.

2.3 Chapter 19-Online

1. Def 19.1.2. find should be finds.

2. Def 19.1.2. Missing period after cost of an optimal offline solution

3. Yao’s lemma. Elaborate on how Yao’s lemma is used? Or what it implies? I’m assuming one side is easier to reason with than the other.
2.4 Chapter 20- STREAMING
1. Page 431. *This result used the one in Part a* There is no Part a. Part 1? Overall lots of indexing errors.

2. *Introduction to Streaming Algorithm* should be *Introduction to Streaming Algorithms*

3. A combination of parameterized algorithms and streaming algorithms. Also, ou should elaborate on what it is; you just say \(O(k)\).

2.5 Chapter 14- PSPACE VIA QSAT
1. Section 14.1: broken ref at the start.

2. Section 14.3.1: typo: This problem *is* not very useful.


4. Section 14.3.1: typo: Turing Machine M and an input \(x\).

5. Section 14.6: references to slides are missing.

6. Section 14.7: connections to not-1-player games are mistakenly put in the section for stochastic games.

2.6 Chapter 15-PSPACE Hardness via Const Logic
1. Section 15.1: broken ref at the start.

2. Section 15.2.1: typo: We say an input edge is active if it *is* directed in.

3. Section 15.2.2: typo: allow us to simulate any CNF formula, by a reduction from 3SAT. (the comma is wrong).

4. Section 15.2.2: meaningless sentence: *The reduction gadget is shown in figure ??*.

5. Section 15.3.2: The configuration in the picture should be *locked* by description.

6. Section 15.5: references to *Hearn&Demaine* are broken.
3 George Tsimos

3.1 Chapter 1-NP and its Variants
1. pg. 22 ex. 1.3.6 *is their* should be *is there*
2. pg. 26 1.6 *obvicious* should be *obvious* and *Sudoku* should be *Sudoku*
3. pg. 27 last sentence of top paragraph instead of *numbers* I think the best term there is *inputs.*
4. pg. 36 Many missing references
5. pg. 37 missing right right brace everywhere (I don’t know if it is notational). Also, you give four, not three equivalent definitions. Also, one *So* is in bullet, which it shouldn’t be.

3.2 Chapter 2- SAT and its variants
1. pg. 43 missing reference to Filho.
2. pg. 45 Def. 2.2.14 1. *NAE-assignment* has one more - than needed.

3.3 Chapter 3: NP-hardness via SAT and Planar SAT
1. pg. 116 Proof sketch, 2., 3. have broken links to Figures.
2. pg. 117 Def. 3.8.2 . . *given a Shakasha puzzle* . . should be *Shakashaka.*
3. pg. 118 The title of 3.9 should be . . *Monotone Rectilinear* . . instead of *Rectilinear.* Similarly it is consistently used in both forms in the definitions at Def 3.9.1, so I don’t know if I am mistaken, but I point it out.
4. pg. 121 3.12 the definition of 2DM, contains within the definition box a commentary of the problem being in P. This is not consistent with how these boxes are used, so I just point it out.
3.4 Chapter 4- NPH via HAM

1. pg. 133 Proof Sketch, first paragraph, broken link for Figure.

2. pg. 139 mate-in-1 and mate-in-0 not clearly defined. Also, broken link for reference Takayuki.

3.5 Chapter 5

1. Def. 5.3.7 DIA definition is not well defined if I understand it correctly. You provide Fig. 5.3 which has repetition of $w_1$ in both the border and 2 layers in but the colors are $w_1, \ldots, w_n$ so what is the property for DIA?

3.6 Chapter 8

1. pg. 213, in the proof of Theorem 8.2.1, on step 3, I think it should be *If there is a vertex v of degree at least $L + 1$*. . . . I thought that the algorithm does not work properly with the exact value but if I am mistaken, then perhaps this part of the algorithm requires some more clarification to become clearer.

2. pg. 214, Theorem 8.2.1 should be denoted Theorem 8.2.4.

3. pg. 215, Ch.8.5, question mark missing in first sentence of second paragraph.

4 Needs a Push

NP-hard-intro.tex-Chap 1, NP-hard-via-planar-sat.tex-Chap 3
NP-hard-via-Ham.tex-Chap 4, NP-hard-via-misc-graph-prob.tex-Chap 5
NP-hard-via-SAT-logic.tex-Chap 6, NP-hard-via-3-Partition-Chap 7
eth.tex Chap 9, inapprox.tex-Chap 11
Counting-problems.tex-Chap 13, asps.tex-Chap 18
stream.tex-Chap 20, ppad.tex-Chap 21
threedimgames.tex, allhw.tex