PhD Corrections - James Trimble

Done

- The candidate should investigate the related work by Jefferson et al using a related approach for computational group theory. *I have added a citation to Jefferson et al. in section 2.5 (page 12). I watched the video of Jefferson's CP 2021 talk on computational group theory and skimmed a few papers. This work is complex and I definitely don't understand all the details, but I am reasonably sure that it is far enough from McSplit that there isn't a need for a detailed discussion of the topic in my thesis.*

- The candidate should expand the description of the Glasgow Subgraph Solver, in particular making clear the role and use of supplementary graphs. *I have added more detail in section 2.7.1 (pages 20 and 21).*

- Check to make sure that where possible you link or cite sources of benchmark instances (apologies if this is already done everywhere) *Checked, and no amendments needed. Sections 3.5, 5.8.2, 5.8.3 and 5.8.4.*

- Title page: don't forget to update month and year *Done*

- There are quite a few blank pages between sections – is this a typesetting problem? Fix if it is easy to do so *I was using the LaTeX option "twoside", which seems to leave blank pages after some chapters. I've switched to "oneside".*

- Beginning of 2.2: "two element subset" –> 'two element subsets' *Done*

- Page 9: "are mutually adjacent" consider "are pairwise adjacent", I believe this is more standard *Done*

- Page 9: consider emphasising that labels may be shared between vertices if this is so (in some areas labeled graphs mean graphs in which each node has a unique label) *Done*

- Page 9: consider adding a citation for the properties of E-R graphs *Done*

- Section 2.4: here you use 'unsatisfiable' as a synonym for a "No" instance of a problem –consider defining this earlier, as non-CP folk could read this *I have added a definition of satisfiable (in passing) in the second paragraph of 1.3.*

- Page 13: 'strongly connected graphs' -it appears the graph in question is not directed, and usually this term is used for directed graphs. Clarify either that the graph is directed or what strongly connected means here *This was an error. I have deleted "strongly"*

- Page 39: consider clarifying or reminding what 'incumbent' means –is this similar to a best-so-far notion? *Done (page 38 in new version)*

- Page 43, Theorem 1 (and surrounding text) please consider changing the notation here as discussed in the viva to avoid the second use of G, H, and to make clear that they are vertex sets in the description of P. Please also consider adding both plan-language intuition for what P is, as well as an example. *Done*

- Figure 3.6: please remind readers that the grey bands represent time-outs *I have added a reminder in the body of Section 3.6.*

- Page 51: please clarify what is meant by 'unconnected' in the description of k-down. *I have re-worded this sentence. (Now on page 50).*

- Page 61: (bottom of this page) make sure you define the symbol that is composed of two orthogonal lines. *Checked. This is defined in section 2.8.2 ("a special value indicating that a vertex is unmapped."), with a reminder on page 60.*

- Page 64: when mentioning an instance in which labels are all distinct: clarify what is meant here. If all labels are distinct and the labels must match, then isn't the problem instance straightforward? *I have clarified the text, and added a footnote to show that MCIS remains NP-hard under this restriction.*

- Page 72: "the plot use" –> 'the plots use' *Done*

- Page 109: clarify what is meant by 'words' of additional space *Re-worded to avoid the word "words" - now on page 101 (previously on page 104)*

- Page 108: please confirm: the larger nodes in the figure are just to contain the larger labels and have no other meaning? *Yes. I've tidied up the figure to make the circle sizes similar.*

- Sometime after page 60: consider adding a table that summarises the results in terms of when to use which approach. *I have added a paragraph to the conclusion of chapter 3 (and removed a sentence from the first paragraph of the same conclusion).*

- Consider commenting on the very-dense/very-sparse duality we discussed in the viva: will an approach for an induced subgraph problem that works very well in the dense setting also work very well in the sparse setting by working in the complement? *I have added a paragraph on page 116 noting this (with an acknowledgement in a footnote).*

- On page 9, consider expanding the section on isomorphism and subgraph notions for directed graphs: e.g. must direction be preserved? *Done*

- Similarly on page 9, consider expanding on the adjacency matrix discussion for directed graphs *Done*

- In discussion of figure 2.5 -might be nice to include a proof that the solution in (b) is minimum *Done*

- For subgraph isomorphism especially, consider highlighting theresults on the harder instances (those that take, say, more than a second) and discuss why we might nevertheless still care about performance on the easier instances. *I have added some brief discussion and results: (1) a paragraph after the discussion of table 5.8; (2) a discussion at the end of section 1.8.2. The final paragraph of this discusses the need for harder benchmark instances.*

Partially done

- If possible, increase the font size in figures. *I have slightly enlarged some of the figures with the smallest font sizes, such as 3.10-3.14 and most of the cumulative and scatter plots in chapter 5.*

Not done

- (very optional) Page 44: carefully consider the proof here, and consider adding a more formal proof that the search trees are the same, perhaps including a bijection between nodes of the search trees.

Additional changes not requested by examiners

- Deleted "and Supergraph" from the thesis title

- Added section 2.9.3, which contains a link to the thesis repository.