Response to Thesis Minor Correction

"***Inferring User Needs & Tasks from App Usage Interactions***"

by Yuan Tian

Thesis submitted to the University of Nottingham for the degree of Doctor of Philosophy

This note accompanies the revised version of the thesis in which I tried to respond and include all the comments provided by the examiners. It is meant to explain how the comments were incorporated into the thesis. I would like to thank both the internal and external examiners for the useful comments that helped me to improve the thesis. In the following, I have replied to examiners comment by comment. Examiners' comments are reported in italics, while my response is in the standard font. Any edits made in the manuscript are marked as blue.

Comment #1

Our primary request is that the candidate adds a subsection (perhaps e.g. 1 page) to chapter 7 discussing the ethical ramifications of their work.

- *The student should adjust the introduction to chapter 7 to be clear about why it is important or valuable to be able to estimate demographics like gender and age, and how it can help task understanding.*
- *The new subsection (in chapter 7) should then discuss the ethical concerns and risks of profiling people by e.g. gender, so that the reader and future researchers understand how these findings can be used for good outcomes while protecting users.*

Response #1

Thank you for your valuable comment. We have adjusted the introduction to chapter 7 to clarify the importance for estimating demographics like gender and age. The corresponding manuscript revisions can be found in § 7 (Page 195 and Page 197). The new subsection (in chapter 7) for discussing ethical concerns and risks of profiling users' demographics was added. Please find the corresponding changes in manuscript in § 7.5 (Page 222 - 224).

Comment #2

The candidate should consider adding a subsection to the conclusions chapter about the wider ethical and privacy concerns (including for machine learning producing harmful outcomes).

Response #2

Thanks a lot for your comment. The subsection about wider ethical and privacy concerns in artificial intelligence and machine learning has been added in § 9.2 (Page 246 - 247).

Comment #3

The candidate should add a new future work subsection focusing on a) how people can validate the work with larger datasets and different labellers. And b) how technology change (like split screening on devices) might affect future work in this area. Or indeed how their work can help inform how those technologies do things like split screening.

Response #3

We appreciate the reviewers' suggestions. The new future work section has been added

in §9.3.3 (Page 251 - 253) to discuss how people can validate the work with future larger datasets and how might the future technology change affect the future work of our related research area.

Comment #4

The candidate should edit some of the phrasing throughout chapter 7 to indicate that the data showed statistical differences in which gender carried out different tasks. Rather than state that people of a certain gender or age group like to do a certain task. This turns statements about genders, to statements about data.

Response #4

Thank you for the valuable comments. We do agree that it's better to show the statistical differences in which gender or age carried out different tasks rather than stating people like to do a certain task. The changes have been made accordingly in § 7 (Page 194), § 7.2.1 (Page 198 - 199), § 7.2.2 (Page 203 - 205).

Comment #5

The candidate should review the captions on all of the figures and tables to make sure they fully explain how they should be read. What does bold mean. What do colours mean. What are the axes being shown, etc.

Response #5

Thank you for the valuable comments. We have addressed them in the revised manuscript. We went through all figures and tables to improve the captions, especially in changing the Figure 1.1 (Page 7), Figure 4.2 (Page 75), Figure 4.3 (Page 76), Figure 4.9 (Page 90), Figure 4.14 (Page 121), Figure 5.1 (Page 140), Figure 5.7 (Page 150), Figure 6.4 (Page 178), Figure 7.4 (Page 203), Figure 8.1 (Page 231), Table 3.5 (Page 57), Table 4.7 (Page 113), and Table 4.8 (Page 115),etc.
