

Answers to the Reviewers' Comments

December 23, 2020

We wish to thank the reviewers and editors for their helpful comments, which we carefully considered and incorporated in the revised version. Based on all reviewers' comments, we completely revised the previous Section 4.2 (now Section 5). This new section discusses the risks of social media as a source of incident information by highlighting both, the conclusion from the survey of the incident databases and the findings in the related work, to more precisely describe the tradeoff to be expected when including vs. excluding social media data. In detail:

- We discuss the issues of social media data in disasters in general and for incident data collection specifically in Section 5.
- We introduced a formalism for the data acquisition process, which describes social media data as an additional source.
- Following this formalism, we describe the expected tradeoff when including social media data as an increase in recall of the process against a loss in precision.
- We show evidence for the tradeoff from our survey and the related work within the scope of each opportunity. The resulting detailed and differentiated discussion forms Section 5.1 and Table 4.

Response to Reviewer 1

Comment 1. *My suggestion is to follow the six primary opportunities identified in section 4 when describing the uncertainties in sect. 4.2. For example, point (2) is the generation of narratives and short description. Here the limitation might be that the narrative can be misleading, e.g. suggesting wrong or unwise behaviour. For floods a classic example is when people report selfies on flooded bridges, or drive a car in flooded roads.*

Answer 1. We followed this suggestion. Section 5.1. now follows the six opportunities, similarly to Section 4, and describes both, the risk of including social media data (i.e. limitations) and the risks of not doing so, according to the evidence we found in the corresponding related work.

Comment 2. *There should be a point-by-point description of the potential limitations after the general description of error types, or the text could be replaced by a table "opportunities-uncertainties".*

Answer 2. We added Table 4 to the manuscript. It contrasts the tradeoff for each opportunity in more detail. We found that the notion of error types was too general to discuss the risks of social media data on a per-opportunity basis. We condensed the general discussion (previously Section 4.2) in Section 5.

Comment 3. *Given the above, I would also add a bit more discussion in the conclusive section.*

Answer 3. We expanded the relevant parts of the discussion in Section 5 extensively to cover this point. We added a concluding remark in the conclusion reflecting the findings of the discussion from Section 5.

Response to Reviewer 2

Comment 4. *My only suggestion is to review the discussion sections by adding a more detailed list of the uncertainties and limitations of this type of data, maybe using examples taken from the events. I think this point of view is quite innovative and is worth analyzing it very carefully.*

Answer 4. We found that the notion of error types was too general to discuss the risks of social media data on a per-opportunity basis. We expanded the discussion of the risks and tradeoffs of social media data in greater detail with findings from the related work. We think this illustrates the problem better than selected Examples.

List of Changes

We thoroughly revised the writing of the manuscript throughout to improve readability and ease of understanding, hence providing a track-changes file provides little value. Instead, we list all major changes in the manuscript here.

0.1 Abstract

10 Renamed opportunity 3 to “recruiting citizen volunteers” to better reflect the intended meaning.

0.2 Section 1: Introduction

37ff Rephrased the research question (2) to better reflect the intended meaning and research question (3) to reflect our extended notion of the risks.

49ff Reworked the description of contribution 3 to reflect our extended notion of the risks.

0.3 Section 4: Opportunities of Social Media Data

- Added additional examples from the related work to provide a more comprehensive perspective.
- Moved Section 4.2 (Uncertainties) to Section 5.
- Moved Section 4.3 (Limitations) to Section 6 (Conclusion) to better reflect it’s purpose of putting our results in perspective.

168ff Rephrased the description of the 3rd opportunity to better reflect the intended meaning.

0.4 Section 5: Opportunities of Social Media Data

- New Section.
- Extended the discussion of the risks of social media (previous 4.2, see responses to the reviewers)
- Section 5.0. provides a general perspective on the risks of using social media data.
- Section 5.1 discusses the tradeoff of including vs. excluding social media data individually for each of the opportunities from Section 4.

0.5 Section 6: Conclusion

319ff Added a remark to also conclude our findings from the revision of Section 5.