Reviewer’s report

Title: Health Timeline: An Insight-based Study of a Timeline Visualization of Clinical Data

Version: 0 Date: 16 Nov 2018

Reviewer: Wolfgang Aigner

Reviewer’s report:

The paper at hand presents a comparative empirical study of a graphical, timeline based representation with an interactive tabular representation of electronic health records.

The main strengths of the paper are that providing empirical evidence for the usage of visualization is very relevant for both, the visualization community as well as the application domain medicine. The authors apply an insight-based evaluation methodology which I find very well-suited for this setup. The study was conducted with healthcare professionals as study participants and real-world datasets as data, which adds a lot of credibility to the results. The paper is structured well and the text is good to follow.

On the downside, there are a number of weaknesses present throughout the paper. The discussion of related approaches is very limited and many important details of the methodological setup/study design are missing. Moreover, the presented Timeline visualization itself is quite limited and does not include many features prior approaches include. Finally, the results are only insufficiently generalized which makes it hard to assess the contribution of the paper.

DETAILED REMARKS:

In the section „Key contribution" it remains somewhat unclear, whether the focus is put on the visualization or on the evaluation methodology. E.g., in related work prior to the section this is mixed.

In case a focus is put on evaluation methodologies for visualization in this domain, the authors should take a look at works of Bertini et al. for example (7 scenarios paper and follow ups) as well as work featured in the BELiV workshop series.

- Related Work

The related work section seems to be very selective or even biased as it selects a very small sample of related systems but does not explain on which basis this selection has been made. E.g., in the cited article [6] a lot more systems are presented and it is not clear why other systems are not included.
The related work section ends very abruptly and seems to be incomplete. Moreover, a summary of the findings from related work is not presented.

- Visualization design

The visualization design itself is rather on the simple side and seems not to provide many of the features other systems from the state of the art do have.

The description of the visualization design is rather minimalistic and does not include any design rationales. Moreover, user requirements should be laid out systematically.

- Study

What I miss in the study is that hypotheses are posed before the experiment is done and that they are based on theoretic considerations.

- Discussion & Conclusion

Unfortunately, the findings of the study are not generalized. It is not made clear, what the broader implications of these findings are.

Limitations of the study and setup should be discussed.

To what extent, the external validity of the study is given, should be mentioned. I.e., how realistic is the task and dataset for the user group in their daily work?

What remains unclear, is the comparability of the selected data. Are the selected patient records on the same level from a point of view of their complexity, number of data elements, etc.?

What was not exactly clear to me is whether each subject used both, visualization and table and whether the study design was counter-balanced or how the order of representation was selected otherwise? Moreover, I wonder whether the order of datasets was the same for all participants?

- Typos & References:

Typo in Background section: Goetze —> Goetz

Typo in Experiment Protocol: „give“ —> „five“

Reference Lesselroth and Pieczkiewicz (2011) is incomplete (contains „???”).

URL references are incomplete (e.g., creation/access dates missing)
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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I am able to assess the statistics

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