Solid Earth Discuss.,
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Interactive comment on "Rapid, semi-automatic fracture and contact mapping for point clouds, images and geophysical data" *by* Samuel T. Thiele et al.

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The manuscript se-2017-83 on "Rapid, semi-automatic fracture and contact mapping for point clouds, images and geophysical data" provides a clean explanation of an interesting algorithm that can be applied to the semi-automatic analysis of 3D point clouds from laser scanner and photogrammetry and 2D aerial/satellite images.

The manuscript is generally well written and the algorithm represents an interesting improvement with respect to usual methodologies. I have also tried to run the algorithm for 3D point clouds (distributed with CloudCompare) and the results are very good.

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Discussion paper

However a few points might be improved in the manuscript, hence my suggestion is for a minor review.

The most important point, in my opinion, is that the "manual" and semiautomatic interpretations yield different results (e.g. Fig 2), hence a proper discussion in terms of false positives and undetected lineaments, with a matrix showing the results, must be included. This will allow the reader to form a better idea on the value of the proposed algorithm.

Below I also list some detailed suggestions (page/line numbers in pdf):

page 1

31-32: paragraph not necessary

33: "virtual" -> consider "digital" more used nowadays

33: consider using more proper references, both older ones that introduced the digital outcrop concept and newer ones with detailed studies

34: this could be not the best reference for photogrammetric workflow

page 2

36: 2.5D should be better defined

page 3

23: add reference to Fig. 1a

24: this is Fig. 1b

27-32: some equations might help the reader here

37: even if you refer to the appendix, please list and briefly describe the cost functions here - this is a key point

page 4

4-14: have you used third party libraries or have you written all the code? this must be clearly stated here.

24: specify which software you use and how many photos in model

29: Melbourne, Australia,

35-36: specify software, camera resolution, focal length etc. (as above)

37: 2 million points is not so much with modern photogrammetry software. have you filtered the dataset? in any case please explain.

page 5

4: LIDAR-derived

29: reference for Sobel filter

31-32: explain closest-point difference - this is a key point

page 6

9: explain why you get different orientation estimates. probably a discussion in terms of false positives and undetected lineaments will be very interesting.

15-21: this case study is not described in details as the other ones. if it is not important, consider deleting it, otherwise add a description as detailed as or the others.

With best regards,

Andrea Bistacchi

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