

Response to Reviewer 1 Comments

Dear editor and reviewers,

We deeply appreciate the time and effort you have spent in reviewing our manuscript (ID: coatings-1689463). Each suggested revision and comment was carefully considered. Your suggestions have enabled us to improve our work. Accordingly, we have uploaded the revised manuscript. Our responses are given directly after the comments in a different color (red). We also hope that our edits and the responses we provide below satisfactorily address all the issues and concerns you have noted. Thank you for your consideration and great help.

Point 1: For all the qualitative results, the ground-truths must be added.

Response 1: Thank you for your suggestion. The ground-truth images are added in the revised manuscript.

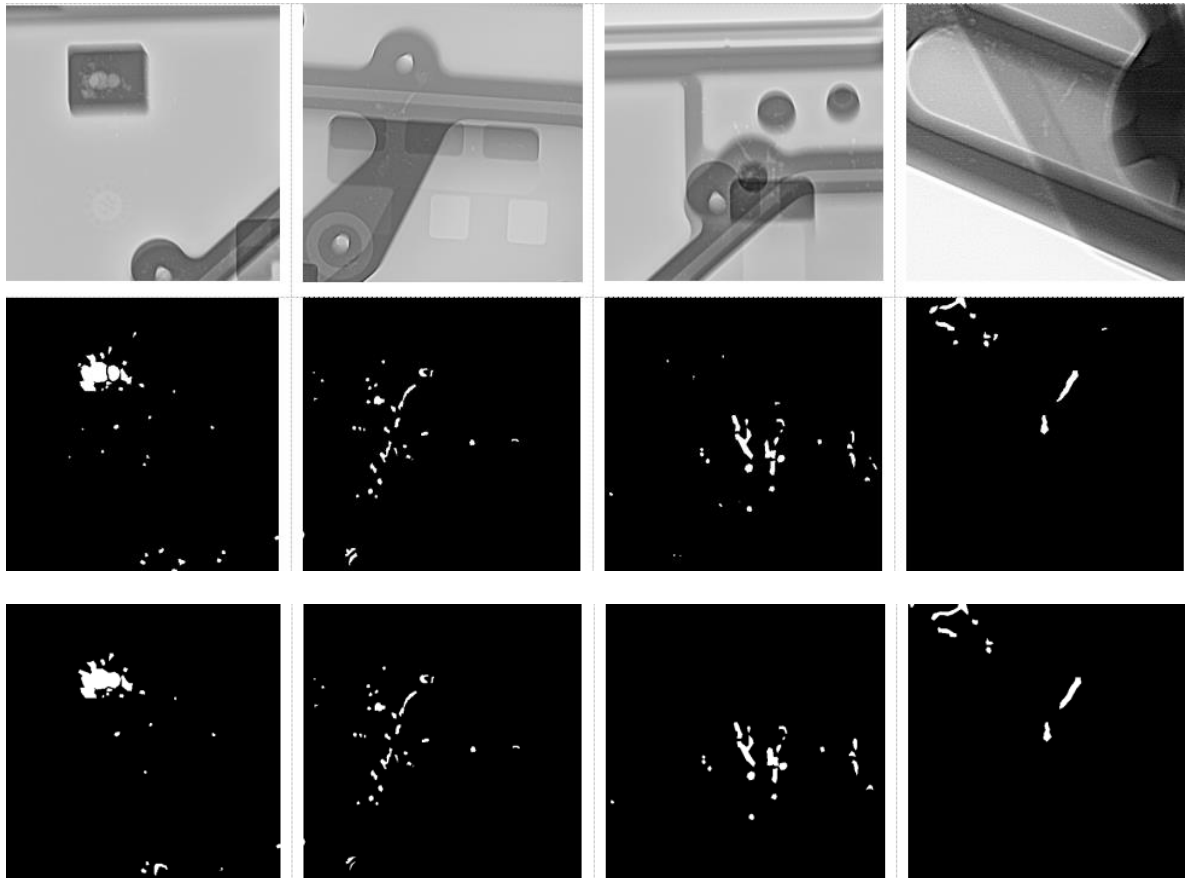


Figure 12. Segmentation examples of proposed method. The original images and groundtruth are shown in the top and middle row, the corresponding segmentation results are shown in the bottom row.

Point 2: I think the defects could be robustly segmented by SDD threshold selection [1-2] with proper preprocessing and postprocessing steps. The authors should compare or discuss it.

[1] Wang, ZhenZhou. "Automatic localization and segmentation of the ventricles in magnetic resonance images." IEEE Transactions on Circuits and Systems for Video Technology 31.2 (2020): 621-631.

[2] Wang, ZhenZhou. "A new approach for segmentation and quantification of cells or nanoparticles." IEEE Transactions on Industrial Informatics 12.3 (2016): 962-971.

Response 2: Thank you for your suggestion.

In [42,43] the authors used the SDD segmentation algorithm to segment ventricles in MRI images, cells or nanoparticles in microscopic images which has the best performance among the listed single-threshold segmentation methods. However, due to the complicated structure of the workpieces, the grayscale distribution of image background is not uniform. It can be inferred that methods in [42,43] is not very applicable for the industrial X-ray defect segmentation tasks.

[42] Wang, ZhenZhou. "Automatic localization and segmentation of the ventricles in magnetic resonance images." IEEE Transactions on Circuits and Systems for Video Technology 31.2 (2020): 621-631.

[43] Wang, ZhenZhou. "A new approach for segmentation and quantification of cells or nanoparticles." IEEE Transactions on Industrial Informatics 12.3 (2016): 962-971.