Supplementary materials

Self-Supervised Image Quality Assessment
for X-ray Tomographic Images of Li-ion Battery

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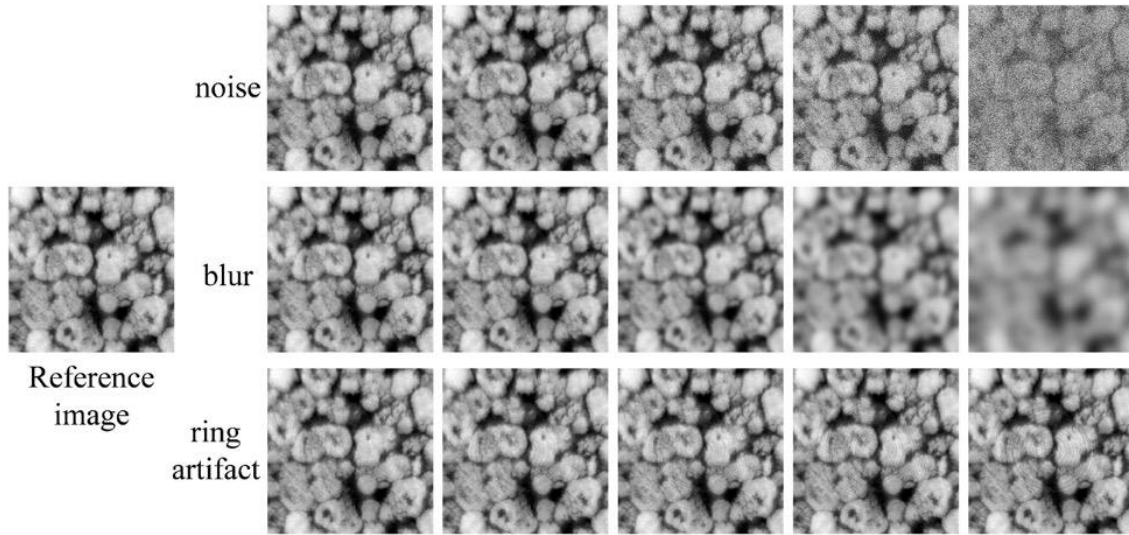[4]ALISTORE-European Research Institute, CNRS FR 3104, Hub de l'Energie, Rue Baudelocque, 80039 Amiens Cedex, France.
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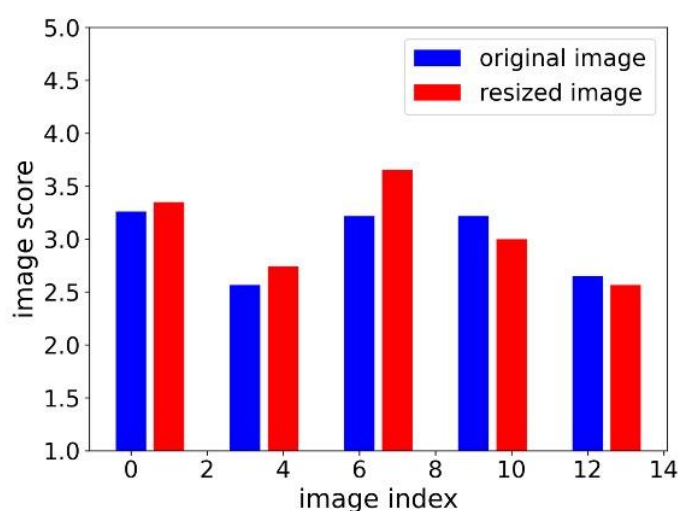
Supplementary Figure 1. Comparison of the labels for images before and after down-sampling. Five image pairs are evaluated.

Supplementary Figure 2. Results of distorted image generation. These three types of distorted images are produced from the reference image.
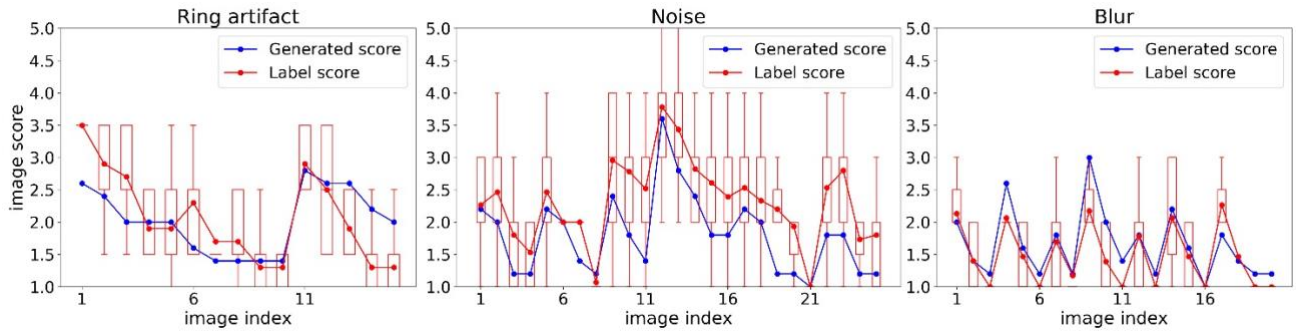

Supplementary Figure 3. The qualitative results of label projection. The red box shows the human labels with 95% confidence intervals. The red dot in each line is the average value of the labels. In y axis, the image score ranges from 1 to 5.
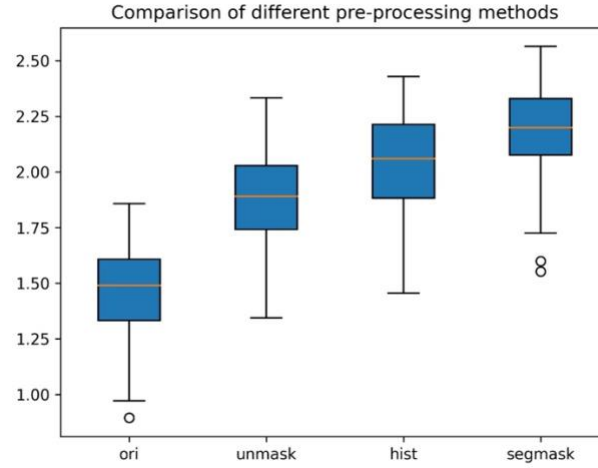
Supplementary Figure 4. Comparison of different pre-processing methods. Three types of preprocessing methods are applied on original image, unsharp mask, unsharp mask and histogram equalization, segmentation mask to enhance boundaries. This figure shows that the segmentation mask pre-processing achieves the best image quality.

Method	SROCC	PLCC
dipIQ[24]	0.780	0.782
MEON[25]	0.728	0.716
RankIQA[22]	0.809	0.801
TIQA(ours)	0.837	0.841

Supplementary Table 1. Comparison with other deep-learning NR-IQA methods.
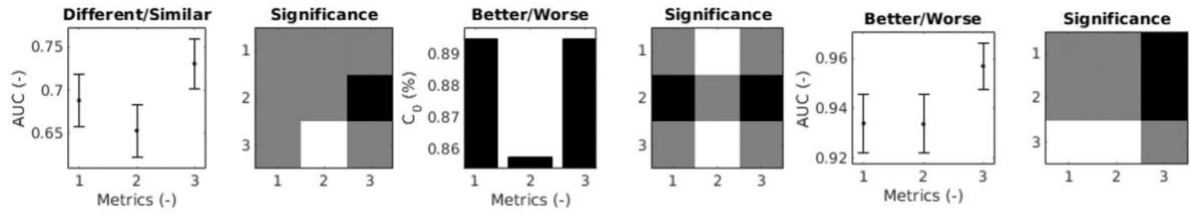
Supplementary Figure 5. Evaluation of different IQA methods on a image volume containing 594 images. On the x axis, from left to right, they are BRISQUE, RankIQA and our method TIQA. The left figure shows how well can the model distinguish between significantly different and similar pairs. The middle and right figures represent whether the model can correctly recognize the stimulus of higher quality in the pair.

Level	Ring artifact	Noise	Blur
1	0.10	0.001	1.20
2	0.13	0.006	2.50
3	0.15	0.022	6.50
4	0.18	0.088	15.20
5	0.20	1.000	33.20

Supplementary Table 2. Parameters to generate distorted images. The parameters in second column are contrast coefficients used to generate ring artifact in images. The third and fourth columns are the variance applied to produce gaussian noise and blur distribution.