Supplementary Material

Anonymous

Anonymous Organization

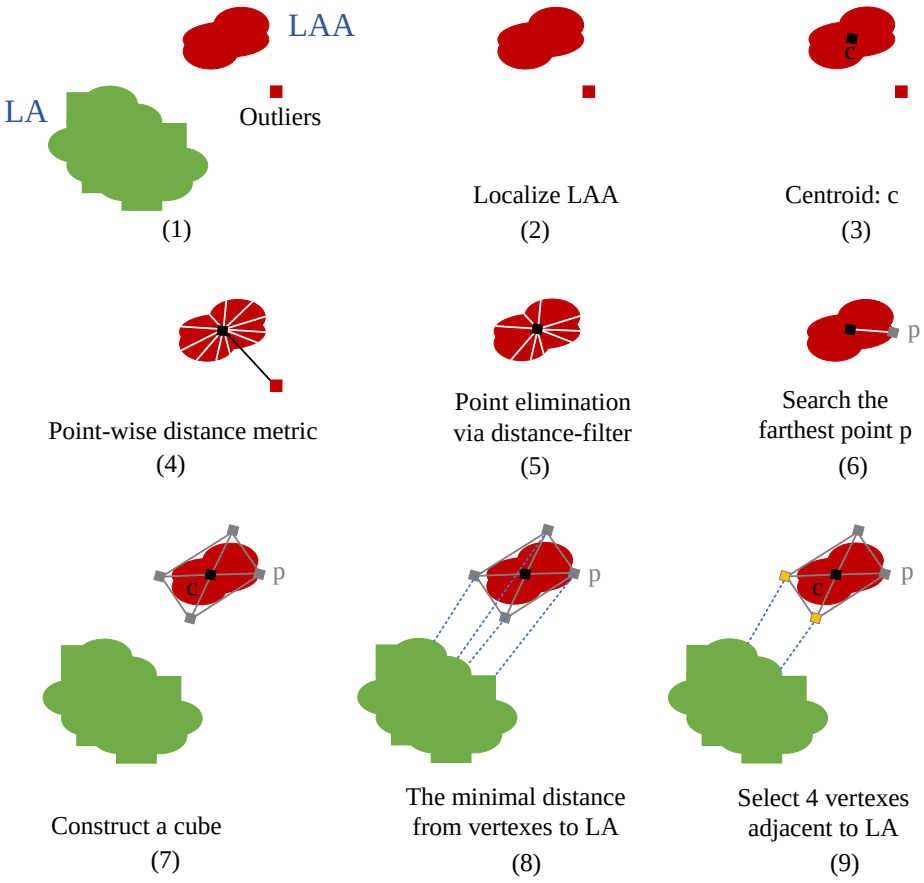

Fig. 1. Algorithm of locating the predicted LAA region with the approximately minimum external cube. Here we visualize with 2D masks for simplicity. (1) Predicted masks from the first stage. (4) Calculate the distance of **c** to other points in region LAA. (5) Eliminate points whose distance to **c** is in the top of 0.5%. (7) **c** and **p** are the center and vertex of the cube. (9) Select 4 in all 8 vertexes most adjacent to LA.

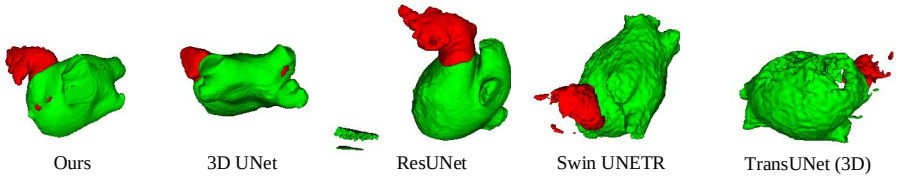

Fig. 2. Visualizations of some failure cases. Not only our model but other CNNs and Transformer-based models suffer from the existence of outliers in predictions, which will increase the metric of 95% hausdorff distance.

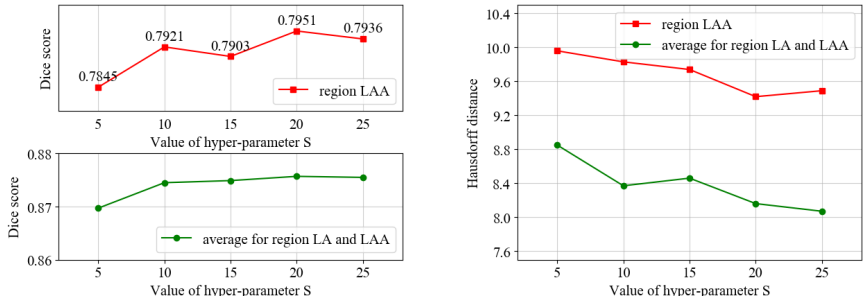

Fig. 3. Ablation study for the choice of hyper-parameter S in the calculation of the connectivity loss. (a) Dice scores (b) hd_{95} (red line: values for region LAA, green line: average values for region LA and LAA).

Table 1. Ablation study on the generalization ability of the connectivity-refined network (CRN) when applied to other CNNs and Transformer-based networks. (LA: Left Atrium. LAA: Left Atrium Appendage.)

Ablation study on the generalization ability of CRN						
Model	dice score (%)			hd_{95} (mm)		
	LAA	LA	Average	LAA	LA	Average
V-Net	74.21	92.68	83.44	12.54	8.82	10.68
V-Net + CRN	**74.67**	**95.96**	**85.32**	**11.02**	**6.98**	**9.00**
nnUNet	81.16	**96.29**	88.72	8.67	7.17	7.92
nnUNet + CRN	**82.56**	96.12	**89.34**	**8.42**	**6.97**	**7.70**
Swin UNETR	76.32	95.94	86.13	11.45	7.71	9.58
Swin UNETR + CRN	**78.73**	**96.05**	**87.39**	**9.45**	**6.85**	**8.15**
UNeXt	79.37	95.34	87.36	**8.38**	8.22	8.31
UNeXt + CRN	**79.76**	**95.91**	**87.84**	8.56	**7.93**	**8.25**