

HUMAN-GUIDED DESIGN TO ENHANCE PNEUMOTHORAX EXPLANATION

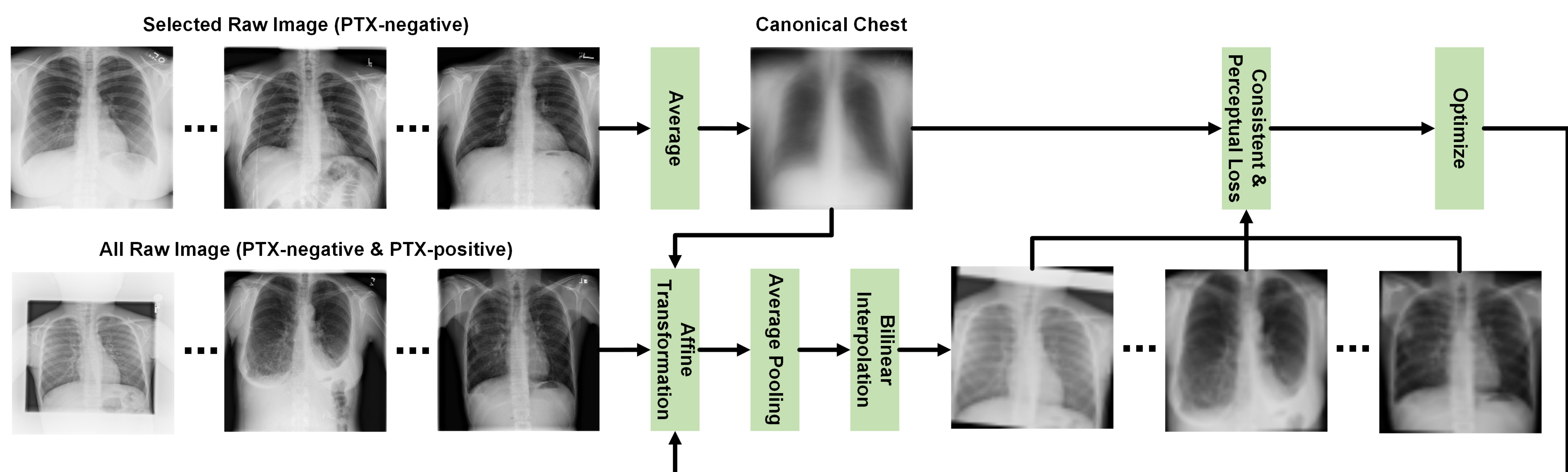
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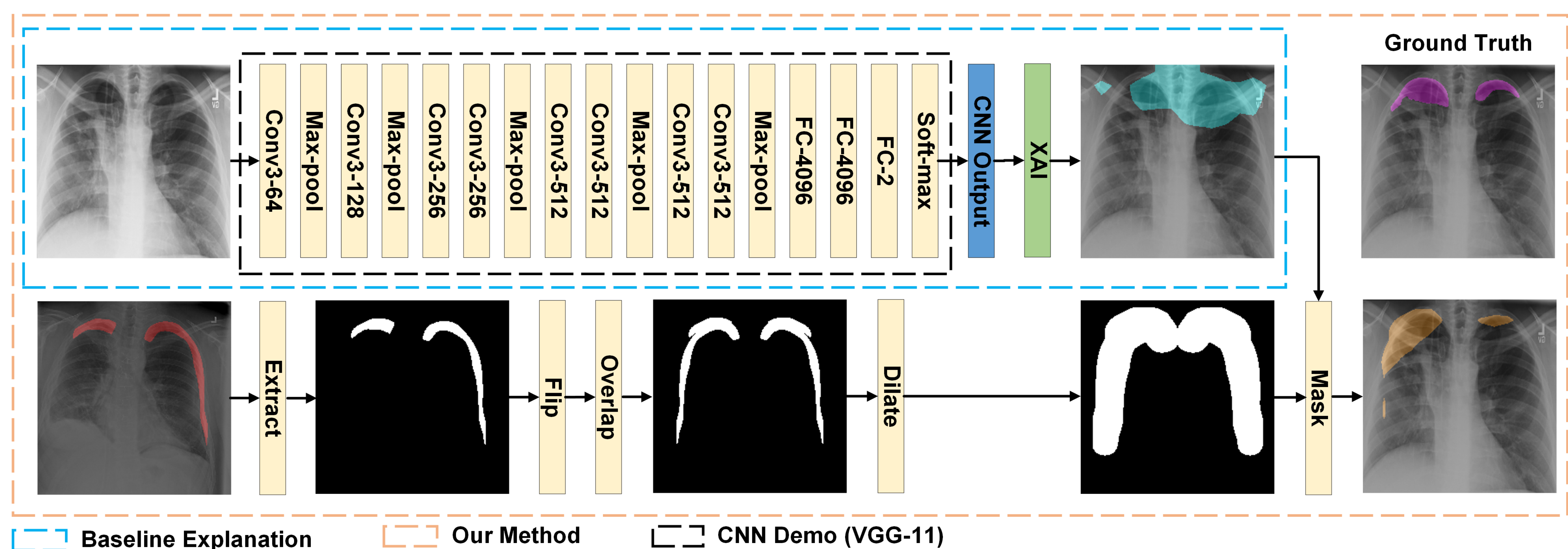
Background

- Pneumothorax (PTX) is an acute thoracic disease caused by the abnormal air collection in the pleural space, defined as the space between the lungs and chest wall.
- A recent benchmarking study pointed out that a CNN achieved an AUROC of 0.993 in the PTX classification while its focus area by Integrated Gradients only overlapped with 7% of the ground truth lesion area.
- The inclusion of prior expert knowledge is one promising direction.

Method: Affine Transformation

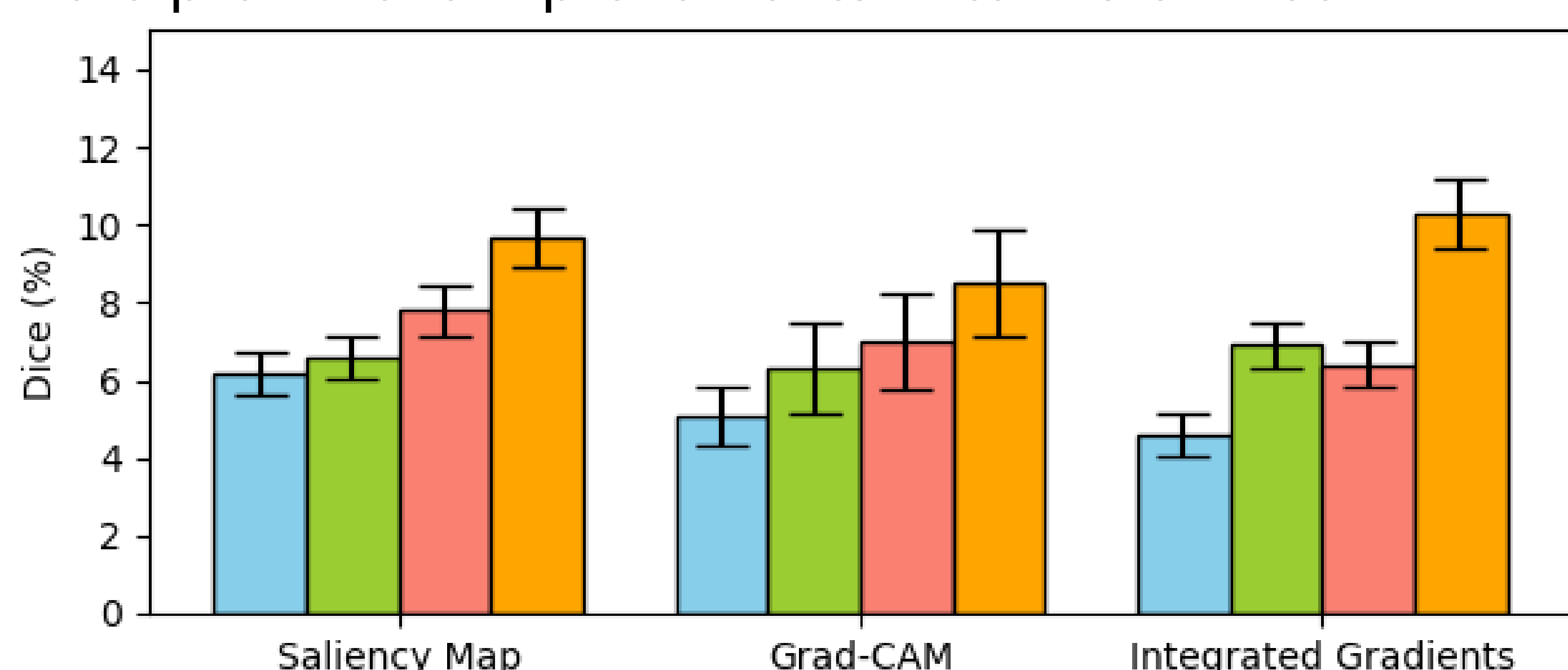


Method: Human Guidance



Results

Adding either affine transformation or human guidance improved explanations, while the use of both resulted in more prominent improvements in terms of Dice.



References

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4. Adriel Saporta, Xiaotong Gui, Ashwin Agrawal, et al. Benchmarking saliency methods for chest x-ray interpretation. Nature Machine Intelligence, 2022.
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