

Supplementary Material of *HoG-Net*: Hierarchical Multi-Organ Graph Network for Head and Neck Cancer Recurrence Prediction from CT Images

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1 Fully-Connected *SuperGraph* Comparison

Below are results comparing *HoG-Net* as described in the main text and a *HoG-Net* variant in which edges of *SuperGraph* are created between all OAR and GTV nodes. As can be observed, results from the variant are inferior.

Table 1. Comparison of *HoG-Net* with Fully-Connected *SuperGraph*

| | HNI | HNPET | RADCURE |
|--|--------------|--------------|----------------|
| Image Only | AUC | AUC | AUC |
| <i>HoG-Net</i> | 0.662 | 0.649 | 0.721 |
| <i>HoG-Net</i> (w/ fully-connected OARs) | 0.643 | 0.617 | 0.681 |
| Image+Clinical | | | |
| <i>HoG-Net</i> | 0.809 | 0.759 | 0.807 |
| <i>HoG-Net</i> (w/ fully-connected OARs) | 0.806 | 0.689 | 0.802 |

2 *HoG-Net* Hyperparameters

Table 2. Hyperparameters for *HoG-Net* Training

| Hyperparameter ↓ | <i>HoG-Net</i> | <i>HoG-Net</i> + Clinical |
|-------------------------|----------------|---------------------------|
| Learning Rate | 4.5e-4 | 8e-4 |
| Dropout | 60% | 60% |
| Optimizer | Adam | Adam |
| Epochs Trained | 100 | 100 |

*All hyperparameters chosen by performance on validation split.

3 nnUNet for OAR Segmentation

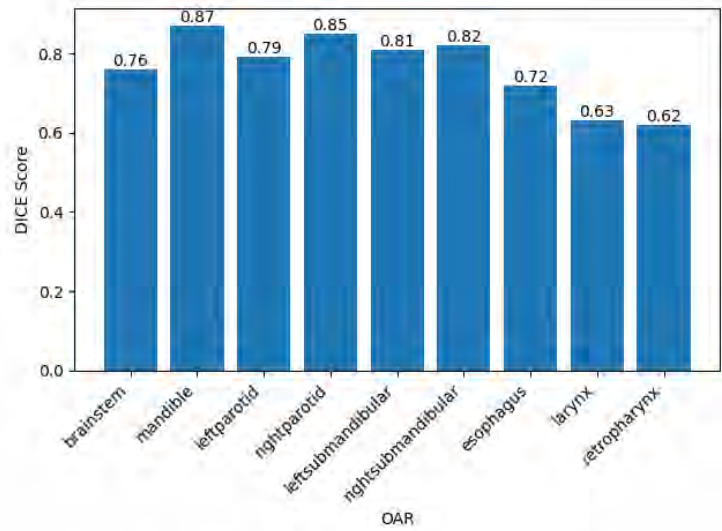


Fig. 1. nnUNet Dice Scores. nnUNet models were evaluated on held out test sets following model training. Note these scores are provided only to demonstrate adequate model segmentation of OARs. OAR segmentation is not a contribution of this work, and performance on the binary classification task shown in the main paper is the desired outcome of this study.