

## **MON-AU**

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Platform: Windows

Prerequisites: Python 3

### *MON-AU: SUMMARY*

We used a deep learning approach to perform object detection and instance segmentation. Mask R-CNN [1] used as the base model. A primary focus of our method is generalisation. To this end, no dataset specific adjustments are made to our method.

### *MON-AU: PREPROCESSING*

The 16-bit images were converted to 8-bit ones. When not specifying a substantial field of interest as used in the challenge datasets, a zero padding of 20 is applied to help detections at frame edges.

### *MON-AU: SEGMENTATION*

Main segmentation is performed by a Mask R-CNN model with a ResNet-based backbone. During training, data augmentation is performed by randomly applying horizontal and vertical flips to images and masks. The silver truth was used for training, whereas the gold truth for validation. Mask R-CNN provides object detection bounding boxes and instance segmentation masks without the need for a watershed or similar transform.

### *MON-AU: POST-PROCESSING*

Non-maxima suppression is applied over detections using bounding boxes and masks to refine predictions and generate final instance segmentations. Small false positive objects are removed when statistical outliers as compared to the rest of the detections within the frame. Zero padding is removed if used.

## **REFERENCES**

1. He K, Gkioxari G, Dollár P, Girshick R. Mask R-CNN. In *Proceedings of the IEEE International Conference on Computer Vision*, 2961-2969 (2017).