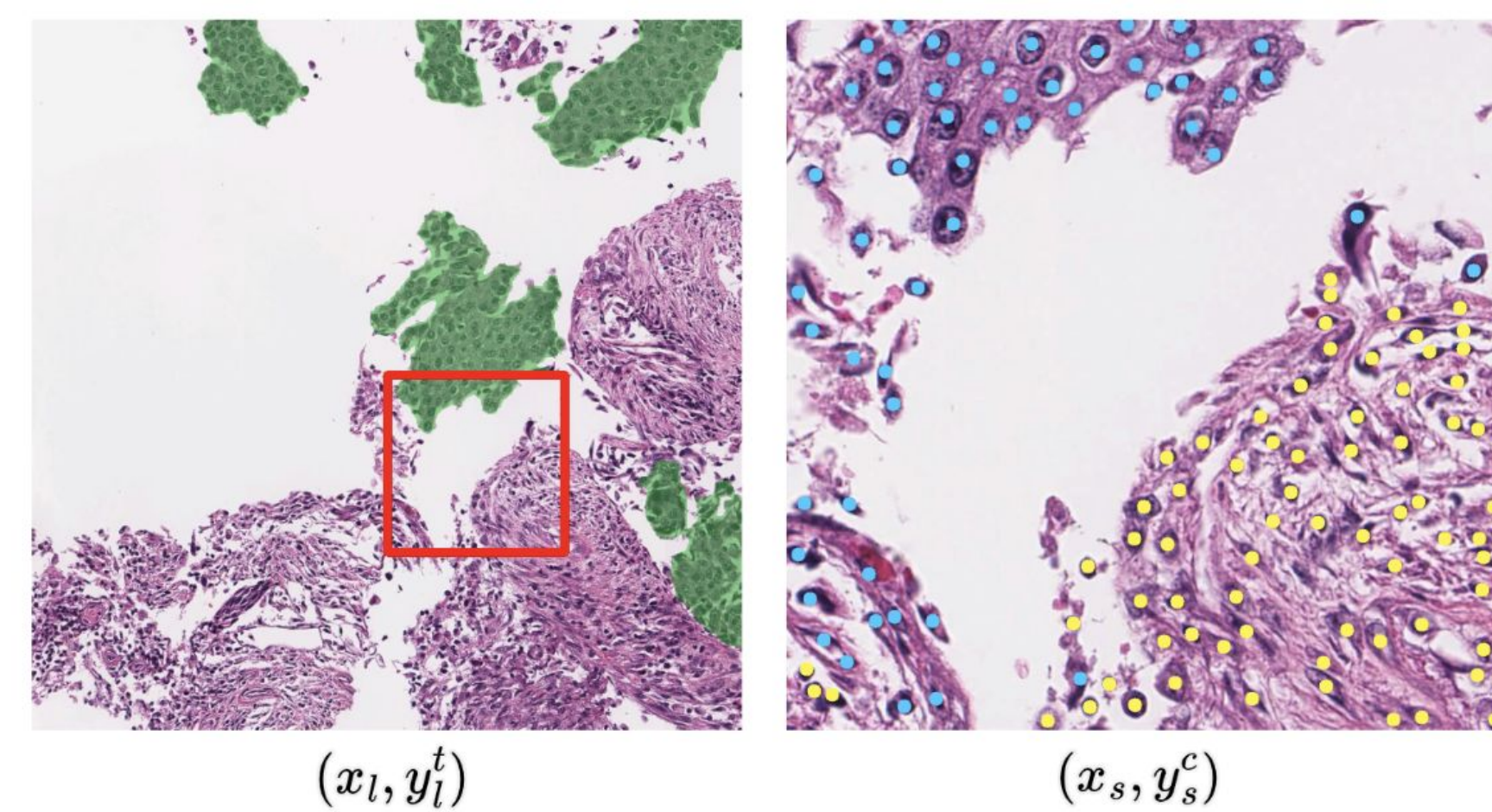


AIMS AND SCOPE

- Tumor tissue segmentation utilizing the newly released OCELOT dataset
- Counting cells in tumor tissue segmentation
- Applying multitask learning later

DATASET

Sample from OCELOT dataset [1]



- The OCELOT dataset was recently released publicly to help improve cell detection through using tissue context when analyzing cells
- Contains overlapping cell and tissue annotations of whole slide images stained with Hematoxylin and Eosin from multiple organs
- OCELOT aims to draw parallels between traditional histopathology and deep learning with tissue context
- The process is zooming out of a stained WSI to first analyze the tissue, then zooming in to analyze the cells.

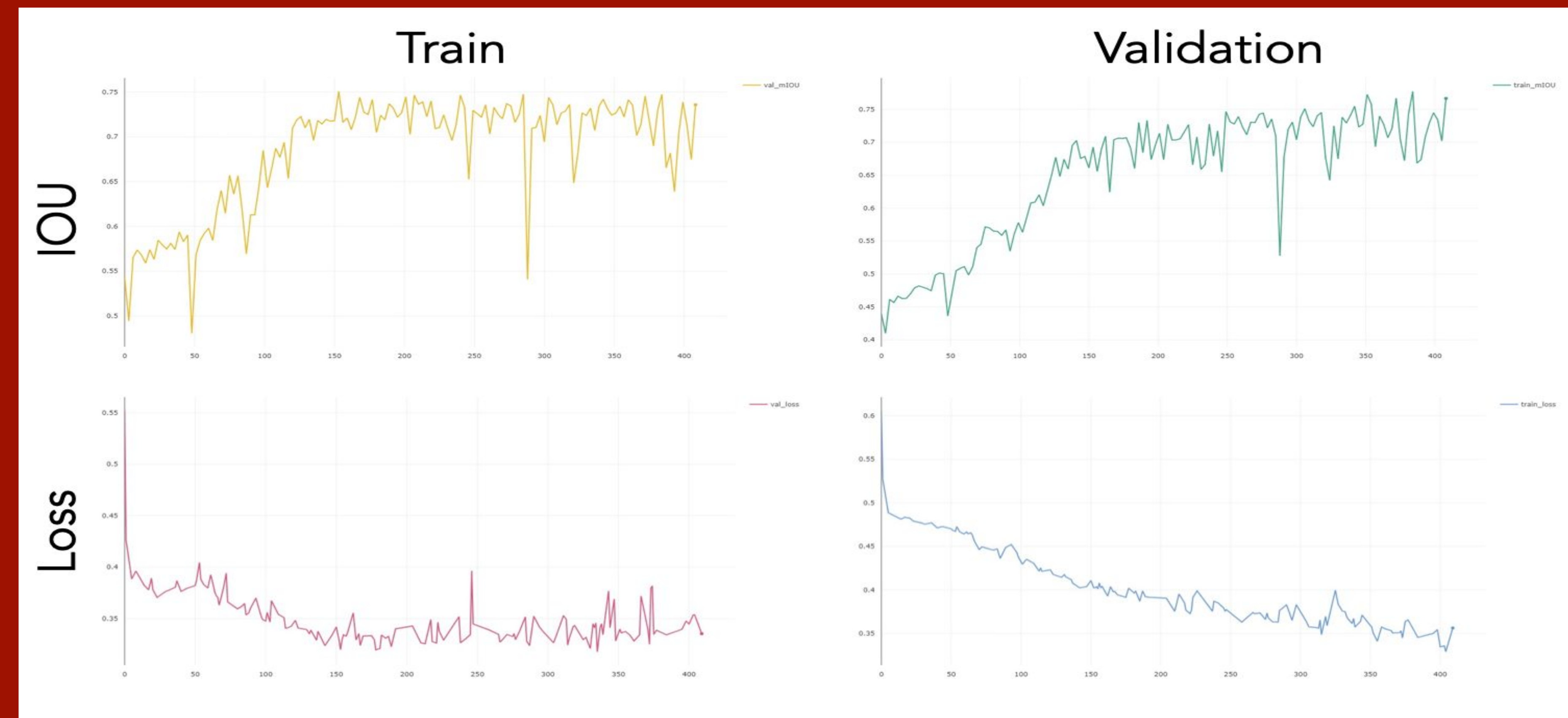


Tumor Segmentation for Computational Histopathology Using Deep Learning (OCELOT Dataset)



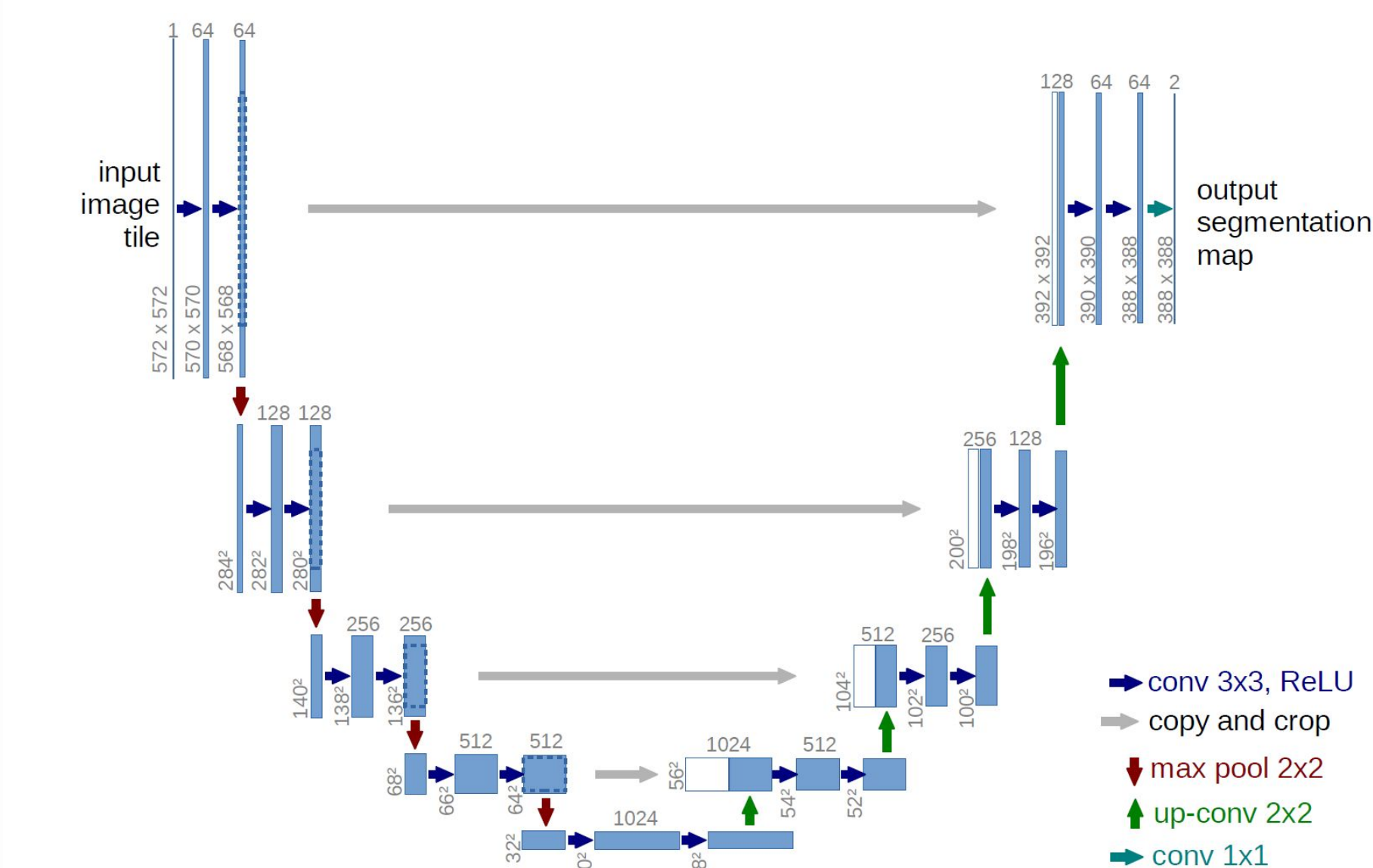
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Training and Validation IOU and Loss Graphs



METHODS

- UNet
- DiceCE loss from MONAI
- Binary segmentation
- Augmentations
 - Vertical / Horizontal Flip, ToGray, Color Jitter, Rotate Scale,
- IOU as testing metric



OBSERVATIONS

- Uncertainty between different types of cells (cancerous / noncancerous), either due to the data or the model itself
- Sometimes the model goes into more detail than the ground truth

FUTURE WORK

- Cell counting
- Multi-task learning
- Combining tissue segmentation and cell segmentation and counting to improve cell detection with OCELOT

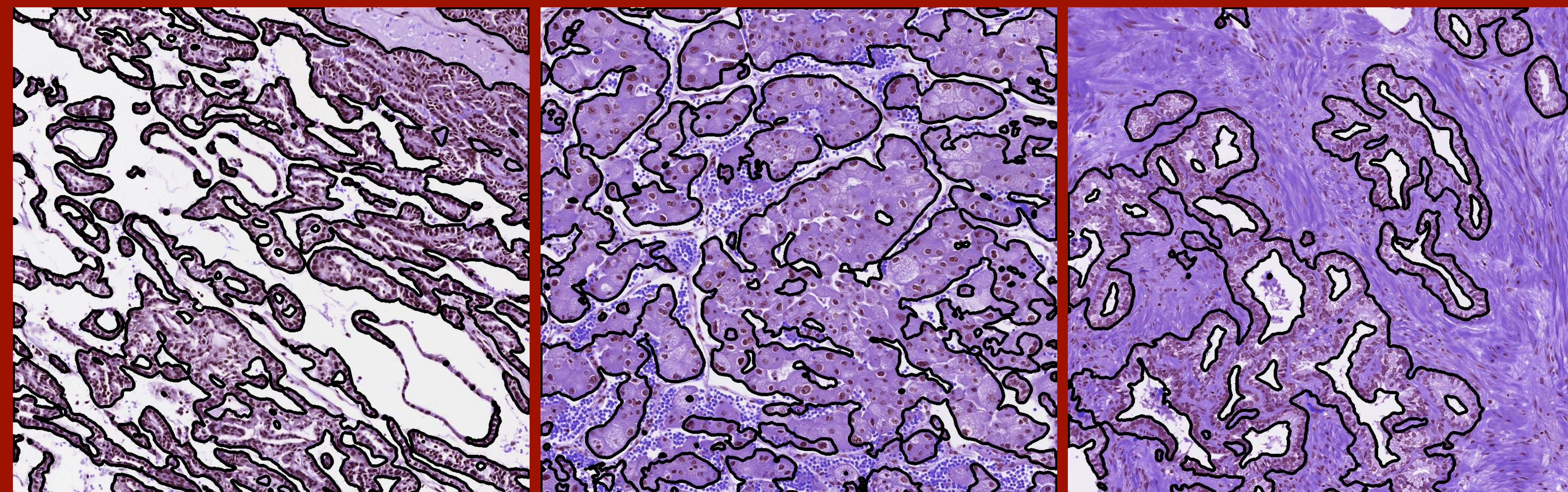
ACKNOWLEDGMENTS/CITATIONS

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[1] Ryu, J., Puche, A. V., Shin, J., Park, S., Brattoli, B., Lee, J., Jung, W., Cho, S. I., Paeng, K., Ock, C.-Y., Yoo, D., & Pereira, S. (2023). OCELOT: Overlapped cell on tissue dataset for histopathology. In arXiv [eess.IV]. <http://arxiv.org/abs/2303.13110>

[2] Ronneberger, O., Fischer, P., & Brox, T. (2015). U-Net: Convolutional Networks for Biomedical Image Segmentation. In arXiv [cs.CV]. <http://arxiv.org/abs/1505.04597>

Predicted Masks



Ground Truth

