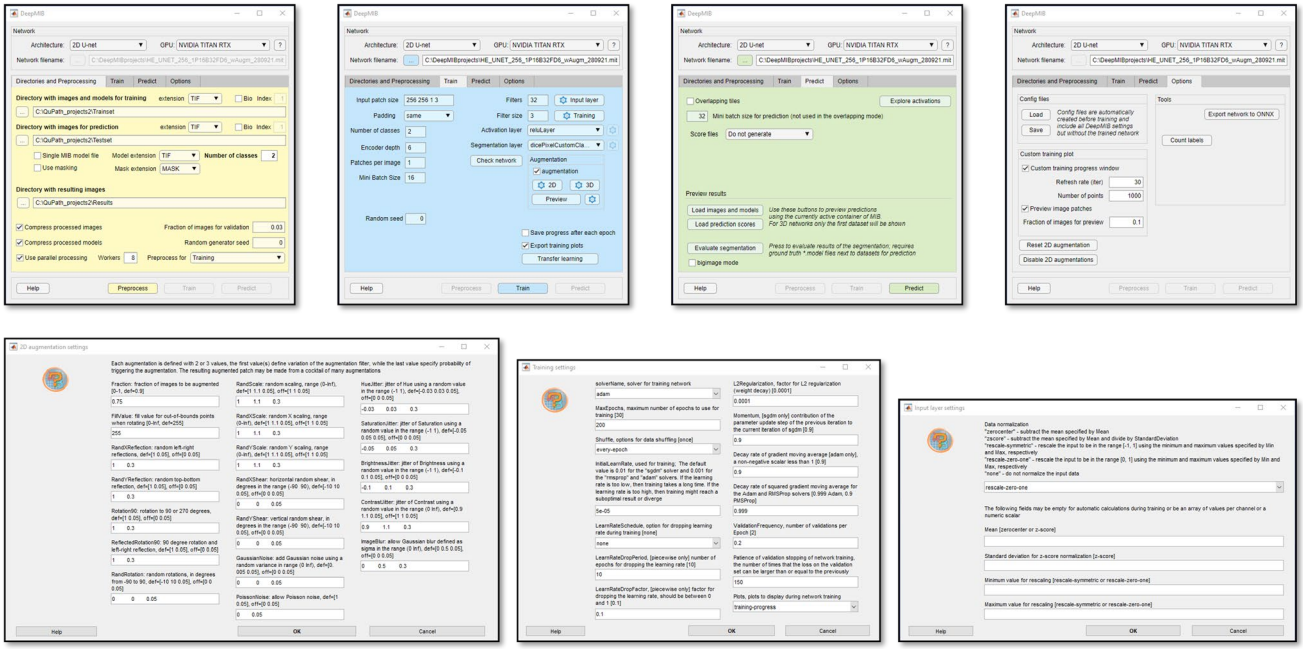
Supplementary Material

1 Supplementary Data

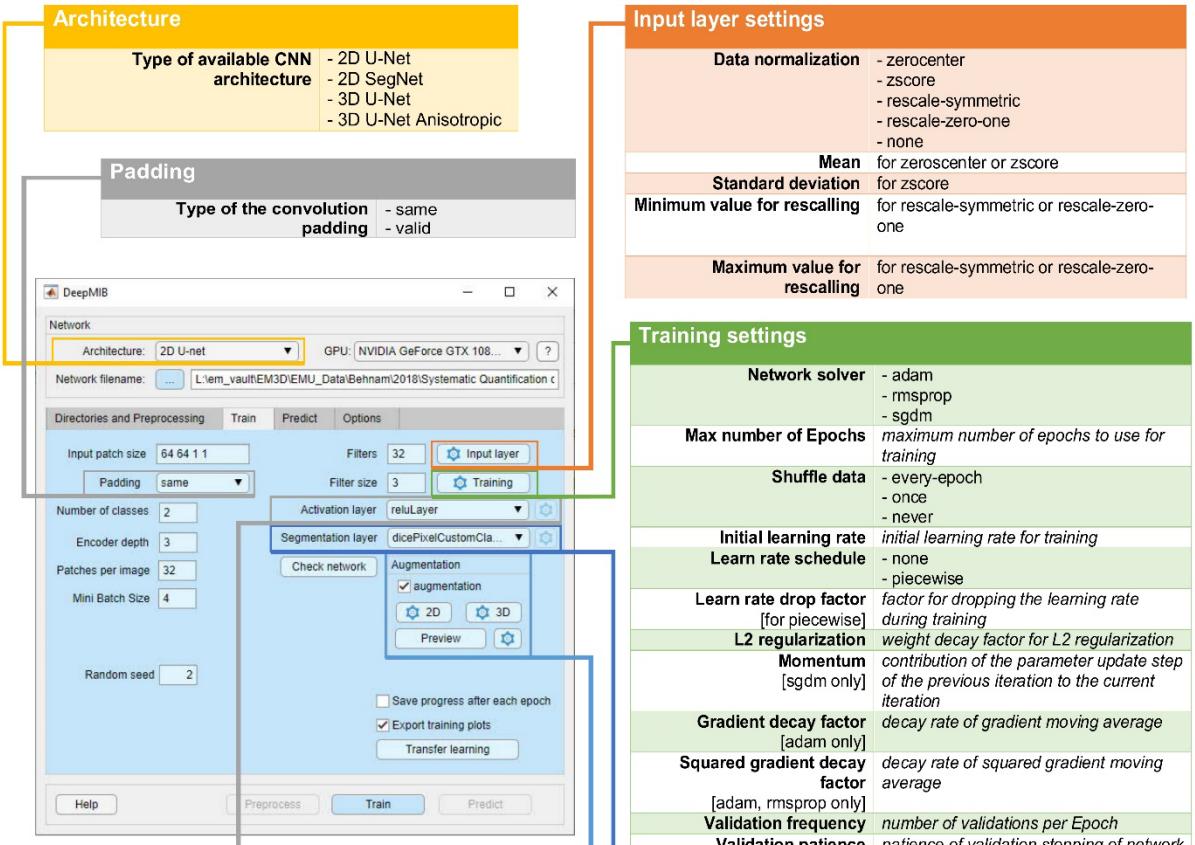
The dataset used in this study consisting of 251 (HE and CD3-stained) colon biopsy WSIs is made openly available at DataverseNO (https://doi.org/10.18710/TLA01U). All source code and a tutorial video can be found in the GitHub repository (https://github.com/andreped/NoCodeSeg).

2 Supplementary Figures and Tables

2.1 Supplementary Figures



Supplementary Figure 1. Example of training hyperparameters used in this study - screenshots from DeepMIB. All trainings had the same hyperparameters indicated by the figure, except the variables indicated in Table 1 in the main paper (i.e., patch size [64x64 – 512x512], number of filters [32 or 64], batch size [16-64]).



Augmentation settings

operation name	2D	3D	operation name	2D	3D
Fraction of images to augment	yes	yes			
Random X reflection	yes	yes	Random X shear	yes	no
Random Y reflection	yes	yes	Random Y shear	yes	no
Random Z reflection	NA	yes	Gaussian noise	yes	no
Rotation 90 degrees	yes	yes	Poisson noise	yes	no
Reflected rotation 90 degrees	yes	yes	Hue jitter	yes	no
Random rotation	yes	no	Saturation jitter	yes	no
Random scaling	yes	no	Brightness jitter	yes	no
Random X scaling	yes	no	Contrast jitter	yes	no
Random Y scaling	yes	no	Image blur	yes	no

Supplementary Figure 2: The graphical user interface of DeepMIB with explanation of the available options for training of 2D U-Net, 2D SegNet, and 3D U-Net deep segmentation networks.

2.2 Supplementary Tables

Supplementary Table 2. Estimated mean IoU and difference compared to the U-Net 512x512 algorithm on the HE and CD3 datasets using mixed linear regression.

		Estimated margin mean IOU			Comparison to HE/CD3 U-Net 512x512			
Dataset	Architecture and hyperparameters	mean	95 % CI (lower limit)	95 % CI (upper limit)	Estimated difference in IOU	95 % CI (lower limit)	95 % CI (upper limit)	p-value
HE	**U-Net 512x512, 32 filters, 16 batch**	**0.952**	**0.944**	**0.960**	**0.000**	**.**	**.**	**.**
	U-Net 256x256, 32 filters, 16 batch	0.936	0.919	0.953	-0.016	-0.028	-0.003	0.013
	U-Net 256x256, 32 filters, 32 batch	0.932	0.916	0.948	-0.019	-0.030	-0.009	2.16×10^{-4}
	U-Net 256x256, 64 filters, 32 batch	0.932	0.916	0.949	-0.019	-0.030	-0.008	5.07×10^{-4}
	U-Net 128x128, 32 filters, 16 batch	0.929	0.911	0.947	-0.023	-0.036	-0.010	6.82×10^{-4}
	U-Net 64x64, 32 filters, 16 batch	0.921	0.902	0.940	-0.031	-0.044	-0.017	6.27×10^{-6}
	SegNet 512x512, 32 filters, 16 batch	0.925	0.912	0.938	-0.027	-0.034	-0.019	4.00×10^{-12}
	SegNet 256x256, 32 filters, 16 batch	0.935	0.921	0.949	-0.017	-0.025	-0.009	5.88×10^{-5}
	SegNet 128x128, 32 filters, 16 batch	0.902	0.882	0.922	-0.050	-0.064	-0.035	6.03×10^{-11}
CD3	**U-Net 512x512, 32 filters, 16 batch**	**0.958**	**0.948**	**0.968**	**0.000**	**.**	**.**	**.**
	U-Net 256x256, 32 filters, 16 batch	0.933	0.913	0.953	-0.025	-0.038	-0.011	2.40×10^{-4}
	SegNet 512x512, 32 filters, 16 batch	0.919	0.905	0.934	-0.038	-0.048	-0.028	6.81×10^{-14}
	SegNet 256x256, 32 filters, 16 batch	0.899	0.883	0.915	-0.058	-0.068	-0.049	2.39×10^{-32}

*Each architecture was compared to the single best performing architecture (U-Net 512x512 32 filters, depth 6, 16 batch, indicated in **bold**) for the HE/CD3 datasets separately, and the estimated mean difference is presented together with 95 % CI and p-values using two-level mixed regression models, where architecture is level 1, image patch is level 2, and with robust variance estimates clustered by WSI and a random intercept for patch.*