Breast Cancer Classification and Localization in Histopathology Images using Weak Supervision

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Abstract. We propose to use the WILDCAT [1] approach to classify histopathology images of breast cancer patients and obtain interpretable per-class activation maps. The model is trained by extracting patches at random locations with random orientations and employs the image level labels as supervision. Particularly, we use a ResNet-18 pre-trained on ImageNet, without the average pooling, to extract the feature maps. The architecture is trained end-to-end for 20 epochs which takes around 20 minutes on a Nvidia GTX 1080Ti. Using this architecture allows to obtain per-class activation maps which can then be used by pathologists to verify the predicted label.
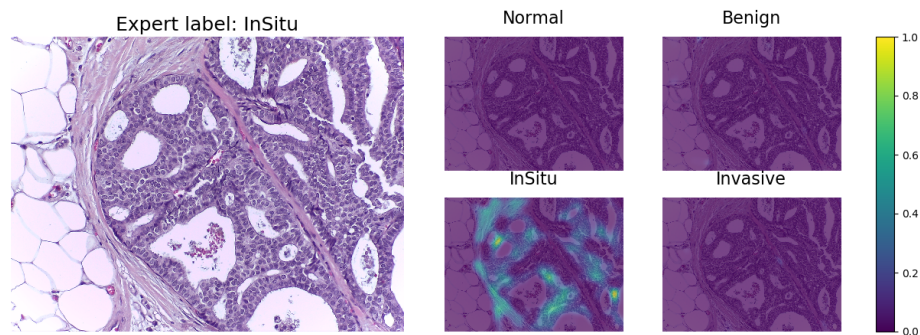
Fig. 1. Example of activation maps (right) obtained for a validation image (left) originally labeled as InSitu.

References

1. T. Durand, T. Mordan, N. Thome, and M. Cord, "WILDCAT: Weakly Supervised Learning of Deep ConvNets for Image Classification, Pointwise Localization and Segmentation," in *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.