ADVANCING MELANOMA DIAGNOSIS WITH SELF-SUPERVISED NEURAL NETWORKS: EVALUATING THE EFFECTIVENESS OF DIFFERENT TECHNIQUES

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We investigate the potential of self-supervision in improving the accuracy of deep learning models trained to classify melanoma patches. Various self-supervision techniques such as rotation prediction, missing patch prediction, and corruption removal were implemented and assessed for their impact on the convolutional neural network's performance. Preliminary results suggest a positive influence of self-supervision methods on the model's accuracy. The study notably demonstrates the efficacy of the corruption removal method in enhancing model performance. Despite observable improvements, we conclude that the self-supervised models have considerable potential for further enhancement, achievable through training over more epochs or expanding the dataset. We suggest exploring other self-supervision methods like Bootstrap Your Own Latent (BYOL) and contrastive learning in future research, emphasizing the cost-benefit trade-off due to their resource-intensive nature. The findings underline the promise of self-supervision in augmenting melanoma detection capabilities of deep learning models.

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