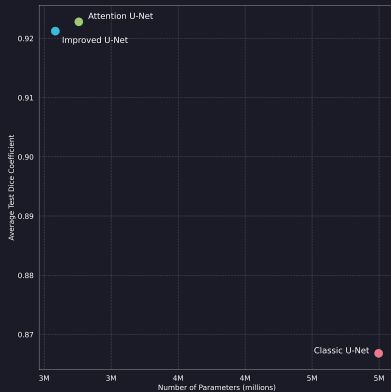


Conclusion

Conclusion

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Possible improvements:

- Use original image size for better classification results
- Use larger dataset to train the VIT model
- Enlarge the VIT model for better performance
- Attempt transfer learning with VIT model
- Test different architectures for the segmentation task
- Fully exploit segmentation dataset
- Perform complete hyperparameter search for the segmentation models
- Use metadata information to predict patient's survival days

References

- [1] B. H. Menze et al. "The Multimodal Brain Tumor Image Segmentation Benchmark (BRATS)", IEEE Transactions on Medical Imaging 34(10), 1993-2024 (2015) DOI: 10.1109/TMI.2014.2377694
- [2] S. Bakas et al. "Advancing The Cancer Genome Atlas glioma MRI collections with expert segmentation labels and radiomic features", Nature Scientific Data, 4:170117 (2017) DOI: 10.1038/sdata.2017.117
- [3] S. Bakas et al. "Identifying the Best Machine Learning Algorithms for Brain Tumor Segmentation, Progression Assessment, and Overall Survival Prediction in the BRATS Challenge", arXiv preprint arXiv:1811.02629 (2018)
- [4] S. Bakas et al. "Segmentation Labels and Radiomic Features for the Pre-operative Scans of the TCGA-GBM collection", The Cancer Imaging Archive, 2017 DOI: 10.7937/K9/TCIA.2017.KLXWJJ1Q
- [5] S. Bakas et al. "Segmentation Labels and Radiomic Features for the Pre-operative Scans of the TCGA-LGG collection", The Cancer Imaging Archive, 2017 DOI: 10.7937/K9/TCIA.2017.GJQ7R0EF
- [6] Alex Krizhevsky et al. "ImageNet classification with deep convolutional neural networks", Commun. ACM 60, 6 (June 2017), 84–90, <https://doi.org/10.1145/3065386>

References

- [7] A. Dosovitskiy et al. “An Image is Worth 16x16 Words: Transformers for Image Recognition at Scale”, International Conference on Learning Representations <http://openreview.net/forum?id=YicbFdNTTy>
- [8] Omer, A.A.M. “Image Classification Based on Vision Transformer”, Journal of Computer and Communications, 12, 49-59 (2024) <https://doi.org/10.4236/jcc.2024.124005>
- [9] Ronneberger, O., Fischer, P., & Brox, T. “U-Net: Convolutional Networks for Biomedical Image Segmentation”, In Nassir Navab, Joachim Hornegger, William M. Wells, & Alejandro F. Frangi (Eds.), Medical Image Computing and Computer-Assisted Intervention – MICCAI 2015, 234–241 https://doi.org/10.1007/978-3-319-24574-4_28
- [10] Chollet, F. “Xception: Deep Learning with Depthwise Separable Convolutions”, CoRR, abs/1610.02357 <http://arxiv.org/abs/1610.02357>
- [11] Liu, Z., Mao, H., Wu, C.-Y., Feichtenhofer, C., Darrell, T., & Xie, S. “A ConvNet for the 2020s”, arXiv preprint arXiv:2201.03545 <https://arxiv.org/abs/2201.03545>
- [12] Sandler, M. et al. “Inverted Residuals and Linear Bottlenecks: Mobile Networks for Classification, Detection and Segmentation”, CoRR, abs/1801.04381 <http://arxiv.org/abs/1801.04381>
- [13] Oktay, O. et al. “Attention U-Net: Learning Where to Look for the Pancreas”, CoRR, abs/1804.03999 <http://arxiv.org/abs/1804.03999>