DLCV-Fall-2020

Medical-Imaging

Team : dlcvta

Simple Baseline

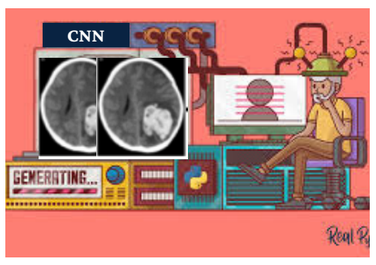
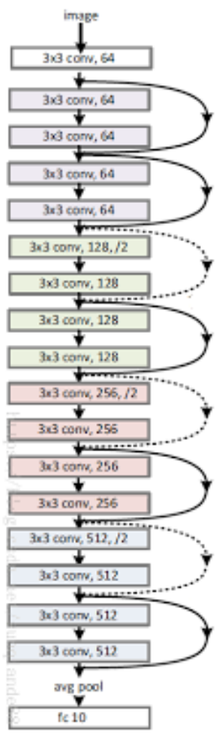


Image Processong :

Read images by **Dataloader** with **train_test_split(0.2)** for **valid**

No horizontal flip or rotation



Model :

ResNet18 (pretrained = **true**) and add few **linear layers** with activation functions

HyperParam :

Epoch = ~**20** , Opt = **Adam** (lr = ~1e-6), Batch_size = **48**, Loss criterion = **BCEWithLogitsLoss** with **Pos_weights** which make imbalance T/F loss balanced

Model Checkpoint :

Take **sigmoid** from the valid's outputs to calculate **f2_score** and save the best

Model Score :

Validation accuracy = **~0.73**

Testing accuracy = **0.71957**

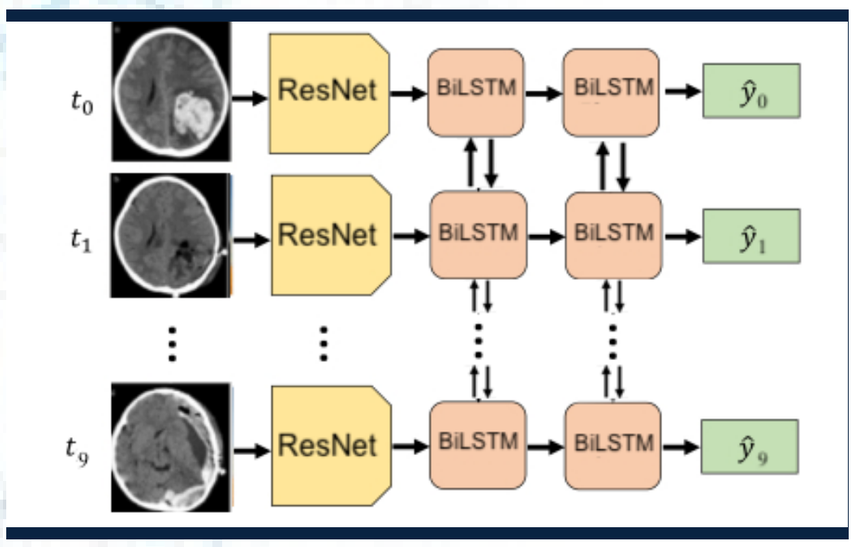
Improved Model

Model :

Take **ResNet18** from simple baseline as Feature Extractor, **LSTM** for **BILSTM** model * 2 , and add some **linear layers** with few activation functions after the output

HyperParam :

sequence length = **10**, hop size = **5**, and the rest are same as previous



Model Score :

Validation accuracy = **~0.79**

Testing accuracy = **0.75235**

Present Work...

- Changing **loss function** from the present **LSTM** model
  - ex. **AsymmetricLoss**.
    - **Validation** accuracy = **0.74547** (only CNN)
    - **Testing** accuracy = **0.72315** (only CNN)
- Use **3D convolution neural network** for the model

Reference

Ben-Baruch, Emanuel, et al. "Asymmetric Loss For Multi-Label Classification." arXiv preprint arXiv:2009.14119 (2020)

Li, Jianqiang, et al. "A multi-label classification model for full slice brain computerised tomography image." BMC bioinformatics 21.6 (2020): 1-18.

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