

ALGORITHM : By Anustup Mukherjee Medmain Assignment

Step 1 : First I dealt with the carcinoma data set , first 5 images is visualized and coordinates are extracted

Step 2 : Next the annotated paths for each image is analyzed and maximum and minimum X , Y values are extracted

Step 3: On the basis of maximum and minimum X and Y , the annotations are plotted over the image , Hence the cancer signing part is recognized from the carcinoma image

Step 4 : Next the annotated section is cropped out and saved in the data set.

Step 5 : Now we did Data analysis by a pixel cross comparison between the annotated cancer image and the neo plastic images , hence pixel feature is extracted from there

Step 6 : Next the annotated image is visualized in 3D plot to understand the area of its spread and data orientation , hence spread feature is extracted from here for the neural network

Step 7 : Next we trained our CNN VGG 16 Neural network , here are the results

Layer (type)	Output Shape	Param #
conv2d_1 (Conv2D)	(None, 224, 224, 64)	1792
conv2d_2 (Conv2D)	(None, 224, 224, 64)	36928
max_pooling2d_1 (MaxPooling2	(None, 112, 112, 64)	0
conv2d_3 (Conv2D)	(None, 112, 112, 128)	73856
conv2d_4 (Conv2D)	(None, 112, 112, 128)	147584
max_pooling2d_2 (MaxPooling2	(None, 56, 56, 128)	0
conv2d_5 (Conv2D)	(None, 56, 56, 256)	295168
conv2d_6 (Conv2D)	(None, 56, 56, 256)	590080
conv2d_7 (Conv2D)	(None, 56, 56, 256)	590080
max_pooling2d_3 (MaxPooling2	(None, 28, 28, 256)	0
conv2d_8 (Conv2D)	(None, 28, 28, 512)	1180160
conv2d_9 (Conv2D)	(None, 28, 28, 512)	2359808
conv2d_10 (Conv2D)	(None, 28, 28, 512)	2359808
max_pooling2d_4 (MaxPooling2	(None, 14, 14, 512)	0
conv2d_11 (Conv2D)	(None, 14, 14, 512)	2359808
conv2d_12 (Conv2D)	(None, 14, 14, 512)	2359808
conv2d_13 (Conv2D)	(None, 14, 14, 512)	2359808
max_pooling2d_5 (MaxPooling2	(None, 7, 7, 512)	0
flatten_1 (Flatten)	(None, 25088)	0
dense_1 (Dense)	(None, 4096)	102764544
dropout_1 (Dropout)	(None, 4096)	0
dense_2 (Dense)	(None, 4096)	16781312
dropout_2 (Dropout)	(None, 4096)	0
dense_3 (Dense)	(None, 2)	8194
Total params: 134,268,738		
Trainable params: 134,268,738		
Non-trainable params: 0		

Epoch 1/100
 2/2 [=====] - 54s 27s/step - loss: 0.9895 - acc: 0.5625 - val_loss: 0.5468 - val_acc: 0.7500

Epoch 00001: val_acc improved from -inf to 0.75000, saving model to vgg16_1.h5
 Epoch 2/100
 2/2 [=====] - 24s 12s/step - loss: 0.8483 - acc: 0.6562 - val_loss: 0.1913 - val_acc: 0.9062

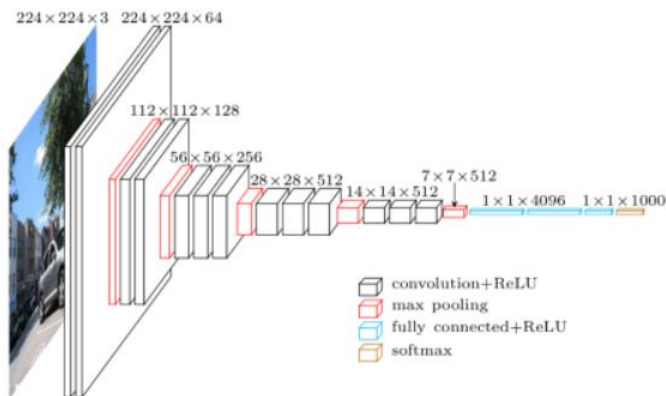
Epoch 00002: val_acc improved from 0.75000 to 0.90625, saving model to vgg16_1.h5
 Epoch 3/100
 2/2 [=====] - 16s 8s/step - loss: 0.3318 - acc: 0.8750 - val_loss: 0.0474 - val_acc: 1.0000

Epoch 00003: val_acc improved from 0.90625 to 1.00000, saving model to vgg16_1.h5
 Epoch 4/100
 2/2 [=====] - 14s 7s/step - loss: 0.2716 - acc: 0.9062 - val_loss: 0.2542 - val_acc: 0.8438

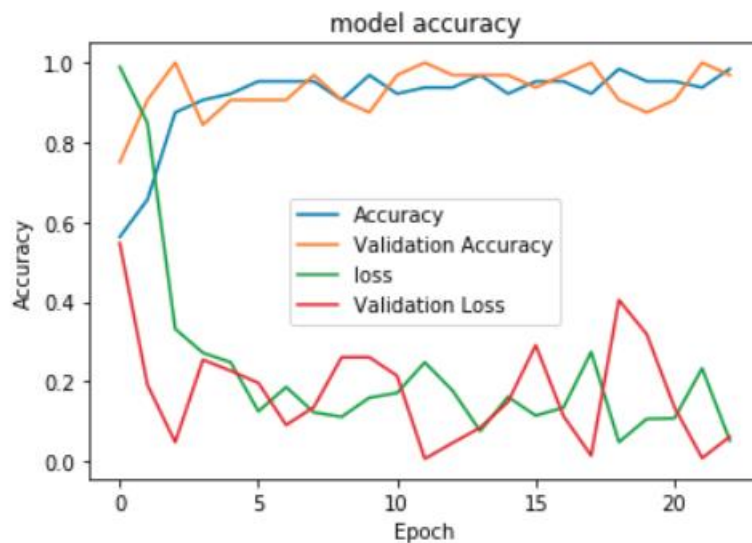
Epoch 00004: val_acc did not improve from 1.00000
 Epoch 5/100
 2/2 [=====] - 11s 6s/step - loss: 0.2479 - acc: 0.9219 - val_loss: 0.2267 - val_acc: 0.9062

Epoch 00005: val_acc did not improve from 1.00000
 Epoch 6/100
 2/2 [=====] - 11s 6s/step - loss: 0.1248 - acc: 0.9531 - val_loss: 0.1960 - val_acc: 0.9062

Epoch 00006: val_acc did not improve from 1.00000



Architecture of VGG16



Step 8 : Finally Classification and detection is carried out .