IMAGE AUGMENTATION

Why do we do? When do we have to?

WHY DO WE DO? WHEN DO WE HAVE TO?

To increase accuracy, whatever the data size is.

http://cs231n.stanford.edu/reports/2017/pdfs/300.pdf

Or

You just have to.

https://arxiv.org/pdf/1704.06825.pdf

https://openreview.net/pdf?id=rkBBChjiG

https://arxiv.org/pdf/1810.04898.pdf

https://arxiv.org/pdf/1509.05267.pdf

http://benanne.github.io/2015/03/17/plankton.html

IMAGE AUGMENTATION

Techniques of Image Augmentation

IMAGE AUGMENTATION WITH KERAS

https://github.com/aleju/imgaug

IMAGE AUGMENTATION

Image Augmentation with Keras

```
from keras.applications.inception_v3 import InceptionV3
from keras.preprocessing import image
from keras.models import Model
from keras.optimizers import Adam
from keras.layers import Dense, GlobalAveragePooling2D,Dropout
from keras import backend as K
from keras.preprocessing.image import ImageDataGenerator



base_model = InceptionV3(weights="imagenet",include_top=False)


x = base_model.output
x = GlobalAveragePooling2D()(x)
x = Dense(512,activation="relu")(x)
x = Dropout(0.5)(x)
x = Dense(512,activation="relu")(x)
predictions = Dense(2,activation="softmax")(x)


model = Model(inputs = base_model.input,outputs = predictions)

for layer in model.layers[:309]:
    layer.trainable = False
for layer in model.layers[309:]:
    layer.trainable= True

model.compile(optimizer=Adam(lr=1e-4),loss="categorical_crossentropy",metrics=['accuracy'])

batch_size = 50
epochs =7

train_datagen = ImageDataGenerator(rescale=1./255,zca_whitening=True,rotation_range=45,horizontal_flip=True,vertical_flip=True,
height_shift_range=0.2,width_shift_range=0.2)
val_datagen = ImageDataGenerator(rescale=1./255)

train_flow = train_datagen.flow_from_directory(directory="imbcnn/Train/",
    target_size=(299, 299),shuffle = True,
    batch_size=batch_size,
    class_mode="categorical")

val_flow = val_datagen.flow_from_directory(directory="imbcnn/Validation/",
    target_size=(299, 299),
    batch_size=batch_size,
    class_mode="categorical")

print(train_flow.class_indices)
print(val_flow.class_indices)


model.fit_generator(train_flow,
                    steps_per_epoch=len(train_flow) / batch_size,
                    validation_data=val_flow,
                    validation_steps=len(val_flow) / batch_size,
                    epochs=epochs, class_weight={0: 0.3,1:0.7},
                    # callbacks=[reduce, tb, early],
                    verbose=1
                    )
```

IMAGE AUGMENTATION

Image Augmentation with ImgAug Library

IMAGE AUGMENTATION WITH KERAS

Module For CustomDataGenerator:

Find on GitHub:

https://github.com/mburaksayici/Practical-CNN-Udemy