

FilterClasses

November 12, 2022

```
[20]: import numpy as np
import os
import pandas as pd

import os
import tensorflow as tf

from keras.preprocessing.image import ImageDataGenerator
from keras.preprocessing import image
from random import sample
```

```
[21]: train_dir = 'images'
dfPath = 'train.csv'

df = pd.read_csv(dfPath)
df = df.astype(str)
```

```
[22]: amt = df.groupby(['hotel_id'])['hotel_id'].count().reset_index(name="counts")
amt.columns = ["hotel", "county"]
amt = amt[amt["county"] < 10]

idxesToDelete = []
for idx, rowHotelCat in amt.iterrows():
    hotelCat = rowHotelCat["hotel"]

    #print(hotelCat)
    #print(df[df["hotel_id"] == hotelCat].index)

    df.drop(df[df["hotel_id"] == hotelCat].index, inplace = True)

newAmt = df.groupby(['hotel_id'])['hotel_id'].count().reset_index(name="counts")
newAmt.columns = ["hotel", "county"]
print(newAmt)
```

	hotel	county
0	100206	17
1	100297	19
2	10031	16

3	100326	20
4	100410	19
...
1371	99038	22
1372	9906	16
1373	99234	16
1374	99311	11
1375	9991	14

[1376 rows x 2 columns]

```
[23]: df.to_csv("new.csv")
```

```
[25]: import random
train = df
valid = pd.DataFrame()

proportion = 0.2

for idx, rowHotelCat in newAmt.iterrows():
    hotelCat = rowHotelCat["hotel"]
    amount = rowHotelCat["county"]
    target = int(amount * proportion)

    chosenIdx = list(df[df["hotel_id"] == hotelCat].index.values)
    toMove = random.sample(chosenIdx, target)

    rowsToMove = df.loc[toMove]

    train.drop(toMove, inplace = True)
    valid = pd.concat([valid, rowsToMove], ignore_index = True)

    for i, row in rowsToMove.iterrows():
        os.rename(os.path.join(train_dir, row["image_id"]), os.path.
↪join('test', row["image_id"]))

train.to_csv("trainSplit.csv")
valid.to_csv("validSplit.csv")
```

```
[28]: print(len(os.listdir("images")))
print(len(os.listdir("test")))
```

38526
6178

```
[13]: import random
```

```

targetMax = 75
for idx, rowHotelCat in newAmt.iterrows():
    hotelCat = rowHotelCat["hotel"]
    amount = rowHotelCat["county"]
    if amount > targetMax:
        chosenIdx = list(df[df["hotel_id"] == hotelCat].index.values)
        toDelete = random.sample(chosenIdx, amount - targetMax)
        df.drop(toDelete, inplace = True)

newAmt = df.groupby(['hotel_id'])['hotel_id'].count().reset_index(name="counts")
newAmt.columns = ["hotel", "county"]
#print(newAmt)

```

```
[14]: df.to_csv("withoutBiggest.csv")
```

```
[19]: train_datagen = ImageDataGenerator(rescale=1/255,
                                         rotation_range=40,
                                         width_shift_range=0.2,
                                         height_shift_range=0.2,
                                         shear_range=0.2,
                                         zoom_range=0.2,
                                         horizontal_flip=True,
                                         fill_mode='nearest')

```

```
[20]: overSampled = df
target = 30

for idx, rowHotelCat in newAmt.iterrows():
    hotelCat = rowHotelCat["hotel"]
    amount = rowHotelCat["county"]

    imagesInCat = list(df[df["hotel_id"] == hotelCat].index.values)
    amount = len(imagesInCat)
    nToPrint = target - amount
    nToPrint = min(amount, nToPrint)

    if int(nToPrint) > 0:
        toAugment = random.sample(imagesInCat, nToPrint)
        made = 0
        print("Making", nToPrint, "for:", hotelCat)

        for currIdxImage in toAugment:
            if made < nToPrint:
                img_path = df.loc[currIdxImage]["image_id"]
                img_path = os.path.join(train_dir, img_path)
                img = tf.keras.preprocessing.image.load_img(img_path)
                img_array = tf.keras.preprocessing.image.img_to_array(img)

```

```

img_array = img_array.reshape((1,) + img_array.shape)

for batch in train_datagen.flow(img_array, batch_size=1):
    temp = tf.keras.preprocessing.image.array_to_img(batch[0])
    name = hotelCat + 'x' + str(made) + '.jpg'
    nameTwo = os.path.join(train_dir, name)
    temp.save(nameTwo)
    made += 1
    row = pd.DataFrame({"image_id" : name, "hotel_id":
↪hotelCat}, index=[0])
    overSampled = pd.concat([overSampled, row], ignore_index =
↪True)

    break

if made >= nToPrint:
    break

```

```

Making 13 for: 100206
Making 11 for: 100297
Making 14 for: 10031
Making 10 for: 100326
Making 11 for: 100410
Making 14 for: 10054
Making 12 for: 100784
Making 10 for: 1009
Making 10 for: 101899
Making 14 for: 102119
Making 2 for: 102219
Making 14 for: 10290
Making 10 for: 102995
Making 14 for: 103319
Making 8 for: 103379
Making 15 for: 103533
Making 8 for: 103650
Making 10 for: 10389
Making 12 for: 10411
Making 12 for: 10503
Making 11 for: 10578
Making 10 for: 10678
Making 9 for: 10684
Making 8 for: 107043
Making 12 for: 107115
Making 11 for: 10766
Making 12 for: 10785
Making 3 for: 10849
Making 12 for: 108817
Making 11 for: 10884

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Making 11 for: 10959
Making 6 for: 110119
Making 12 for: 11025
Making 11 for: 11039
Making 15 for: 110509
Making 11 for: 11060
Making 3 for: 11099
Making 15 for: 11101
Making 11 for: 11165
Making 6 for: 11200
Making 12 for: 11257
Making 13 for: 11289
Making 14 for: 11311
Making 12 for: 113206
Making 14 for: 1144
Making 12 for: 114886
Making 14 for: 115137
Making 10 for: 11522
Making 13 for: 11545
Making 12 for: 11559
Making 8 for: 115775
Making 14 for: 11581
Making 12 for: 11600
Making 14 for: 11646
Making 4 for: 11652
Making 14 for: 116718
Making 9 for: 11672
Making 12 for: 116964
Making 12 for: 116992
Making 11 for: 117083
Making 15 for: 11725
Making 12 for: 117631
Making 13 for: 117772
Making 12 for: 118455
Making 14 for: 118824
Making 15 for: 11889
Making 14 for: 11950
Making 15 for: 11982
Making 12 for: 120013
Making 8 for: 1201
Making 14 for: 120255
Making 14 for: 120942
Making 7 for: 1210
Making 13 for: 12108
Making 15 for: 121134
Making 12 for: 12117
Making 10 for: 121187
Making 15 for: 1215

Making 14 for: 12189
Making 2 for: 122067
Making 13 for: 122919
Making 15 for: 123709
Making 8 for: 12387
Making 11 for: 12398
Making 7 for: 12485
Making 14 for: 125049
Making 2 for: 12540
Making 9 for: 125646
Making 6 for: 125715
Making 6 for: 12682
Making 12 for: 12685
Making 2 for: 12809
Making 6 for: 12878
Making 15 for: 12922
Making 9 for: 12958
Making 12 for: 12977
Making 1 for: 12994
Making 12 for: 130103
Making 10 for: 13043
Making 10 for: 13077
Making 15 for: 13100
Making 13 for: 13166
Making 13 for: 132880
Making 15 for: 13391
Making 12 for: 133964
Making 12 for: 13416
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Making 12 for: 134580
Making 3 for: 13469
Making 8 for: 13470
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Making 12 for: 13621
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Making 2 for: 13736
Making 10 for: 13796
Making 12 for: 13800
Making 6 for: 13867
Making 13 for: 139478
Making 12 for: 13977
Making 6 for: 14013
Making 13 for: 140793
Making 12 for: 141202
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Making 4 for: 141562
Making 12 for: 141614
Making 12 for: 141633

Making 11 for: 14175
Making 12 for: 14332
Making 13 for: 14366
Making 13 for: 144064
Making 12 for: 144190
Making 10 for: 144712
Making 5 for: 14474
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Making 13 for: 15236
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Making 12 for: 15395
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Making 9 for: 18102
Making 14 for: 18134
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Making 7 for: 1910
Making 13 for: 19101
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Making 13 for: 43331

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Making 14 for: 436
Making 14 for: 4389
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Making 12 for: 53405
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Making 11 for: 99311
Making 14 for: 9991
```

```
[22]: print(overSampled)
      overSampled.to_csv("oversampled.csv")
```

	image_id	hotel_id
0	000011648.jpg	15526
1	000011630.jpg	15526
2	000011650.jpg	15526
3	000011633.jpg	15526
4	000011656.jpg	15526
...
40586	9991x9.jpg	9991
40587	9991x10.jpg	9991
40588	9991x11.jpg	9991
40589	9991x12.jpg	9991
40590	9991x13.jpg	9991

```
[40591 rows x 2 columns]
```

```
[ ]:
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