AutoEncoder_Model

April 7, 2019

In [1]:
```
import numpy as np
import pandas as pd
import glob
import imageio
from scipy import misc
from keras.models import Model
from keras.layers import *
from keras import backend as K
from keras.optimizers import Adam
import csv
from tqdm import tqdm
import matplotlib.image as mpimg
import matplotlib.pyplot as plt
import os
%matplotlib inline
```

```
Using TensorFlow backend.
```

In [2]:
```
#
img_path = '../MusicInputFig_Eng/*'
imgs = glob.glob(img_path) # list
```

In [3]:
```
def imread(f):
    x = misc.imread(f, mode='RGB')
    return x.astype(np.float32) / 255 * 2 - 1
```

In [4]:
```
#  :
img_train = []
index = 0
with open('../Data/nameIndex.csv', 'w') as csv_file:
    writer = csv.writer(csv_file)
    for imgPath in tqdm(iter(imgs[:150])):
        fname = os.path.splitext(imgPath.split('/')[-1])[0] #
        row = [index, fname]
        writer.writerow(row)
        index = index+1
        img = imread(imgPath)
```

```
                img_train.append(img)
                del img

0it [00:00, ?it/s]/home/bob/.conda/envs/pythonDL/lib/python3.6/site-packages/ipykernel_launcher
`imread` is deprecated in SciPy 1.0.0, and will be removed in 1.2.0.
Use ``imageio.imread`` instead.

150it [00:04, 33.91it/s]


In [5]: image_train = np.array(img_train)
        x_train = image_train
        del img_train

In [6]: x_train.shape

Out[6]: (150, 256, 2560, 3)

In [8]: #----------------------

In [7]: img_height = x_train.shape[1]
        img_weight = x_train.shape[2]

In [8]: z_dim = 256 #
        alpha = 0.5 # loss
        beta = 1.5 # loss
        gamma = 0.01 # loss

In [9]: #
        x_in = Input(shape=(img_height, img_weight, 3))
        x = x_in

        for i in range(4):
            x = Conv2D(int(z_dim / 2**(3-i)),
                       kernel_size=(3,3), padding='SAME')(x)
            x = BatchNormalization()(x)
            x = LeakyReLU(0.2)(x)
            x = MaxPooling2D((2, 2))(x)

        feature_map = x # feature_map
        feature_map_encoder = Model(x_in, x)


        for i in range(2):
            x = Conv2D(z_dim,
                       kernel_size=(3,3),
                       padding='SAME')(x)
            x = BatchNormalization()(x)
            x = LeakyReLU(0.2)(x)
```

```
        x = GlobalMaxPooling2D()(x) #

        z_mean = Dense(z_dim)(x) #
        z_log_var = Dense(z_dim)(x) # VAE


        encoder = Model(x_in, z_mean) # z_mean
```

In [10]:
```
        #
        def sampling(args):
            z_mean, z_log_var = args
            u = K.random_normal(shape=K.shape(z_mean))
            return z_mean + K.exp(z_log_var / 2) * u

        #
        z_samples = Lambda(sampling)([z_mean, z_log_var])
        prior_kl_loss = - 0.5 * K.mean(1 + z_log_var - K.square(z_mean) - K.exp(z_log_var))

        # shuffle
        def shuffling(x):
            idxs = K.arange(0, K.shape(x)[0])
            idxs = K.tf.random_shuffle(idxs)
            return K.gather(x, idxs)
```

In [11]:
```
        #
        z_shuffle = Lambda(shuffling)(z_samples)
        z_z_1 = Concatenate()([z_samples, z_samples])
        z_z_2 = Concatenate()([z_samples, z_shuffle])

        #
        feature_map_shuffle = Lambda(shuffling)(feature_map)
        z_samples_repeat = RepeatVector(16 * 160)(z_samples)
        z_samples_map = Reshape((16, 160, z_dim))(z_samples_repeat)
        z_f_1 = Concatenate()([z_samples_map, feature_map])
        z_f_2 = Concatenate()([z_samples_map, feature_map_shuffle])

        #
        z_in = Input(shape=(z_dim*2,))
        z = z_in
        z = Dense(z_dim, activation='relu')(z)
        z = Dense(z_dim, activation='relu')(z)
        z = Dense(z_dim, activation='relu')(z)
        z = Dense(1, activation='sigmoid')(z)

        GlobalDiscriminator = Model(z_in, z)

        z_z_1_scores = GlobalDiscriminator(z_z_1)
```

```
z_z_2_scores = GlobalDiscriminator(z_z_2)
global_info_loss = - K.mean(K.log(z_z_1_scores + 1e-6) + K.log(1 - z_z_2_scores + 1e-6

#
z_in = Input(shape=(None, None, z_dim*2))
z = z_in
z = Dense(z_dim, activation='relu')(z)
z = Dense(z_dim, activation='relu')(z)
z = Dense(z_dim, activation='relu')(z)
z = Dense(1, activation='sigmoid')(z)

LocalDiscriminator = Model(z_in, z)

z_f_1_scores = LocalDiscriminator(z_f_1)
z_f_2_scores = LocalDiscriminator(z_f_2)
local_info_loss = - K.mean(K.log(z_f_1_scores + 1e-6) + K.log(1 - z_f_2_scores + 1e-6)
```

1

2

model_train = Model(x_in, [z_z_1_scores, z_z_2_scores, z_f_1_scores, z_f_2_scores])
model_train.add_loss(alpha * global_info_loss + beta * local_info_loss + gamma * prior_kl_loss)
model_train.compile(optimizer=Adam(1e-3))
model_train.fit(x_train, epochs=100, batch_size=100) #model_train.save_weights('image.weights')

3

```
In [12]: #
         model_train = Model(x_in, [z_z_1_scores, z_z_2_scores, z_f_1_scores, z_f_2_scores])
         model_train.add_loss(alpha * global_info_loss + beta * local_info_loss + gamma * prio
         model_train.compile(optimizer=Adam(1e-3))
```

3.0.1 Train model

```
In [15]: history = model_train.fit(x_train, epochs=1, batch_size=4)

Epoch 1/1
150/150 [==============================] - 14s 94ms/step - loss: 4.4096


In [21]: from keras.utils import plot_model
         plot_model(model_train, to_file='model.png')

In [ ]:

In [ ]:
```

In [20]: model_train.summary()

```
_________________________________________________________________________________________________
Layer (type)                 Output Shape              Param #     Connected to
=================================================================================================
input_1 (InputLayer)         (None, 256, 2560, 3) 0
_________________________________________________________________________________________________
conv2d_1 (Conv2D)            (None, 256, 2560, 32 896         input_1[0][0]
_________________________________________________________________________________________________
batch_normalization_1 (BatchNor (None, 256, 2560, 32 128         conv2d_1[0][0]
_________________________________________________________________________________________________
leaky_re_lu_1 (LeakyReLU)    (None, 256, 2560, 32 0           batch_normalization_1[0][0]
_________________________________________________________________________________________________
max_pooling2d_1 (MaxPooling2D)  (None, 128, 1280, 32 0           leaky_re_lu_1[0][0]
_________________________________________________________________________________________________
conv2d_2 (Conv2D)            (None, 128, 1280, 64 18496       max_pooling2d_1[0][0]
_________________________________________________________________________________________________
batch_normalization_2 (BatchNor (None, 128, 1280, 64 256         conv2d_2[0][0]
_________________________________________________________________________________________________
leaky_re_lu_2 (LeakyReLU)    (None, 128, 1280, 64 0           batch_normalization_2[0][0]
_________________________________________________________________________________________________
max_pooling2d_2 (MaxPooling2D)  (None, 64, 640, 64)  0           leaky_re_lu_2[0][0]
_________________________________________________________________________________________________
conv2d_3 (Conv2D)            (None, 64, 640, 128) 73856       max_pooling2d_2[0][0]
_________________________________________________________________________________________________
batch_normalization_3 (BatchNor (None, 64, 640, 128) 512         conv2d_3[0][0]
_________________________________________________________________________________________________
leaky_re_lu_3 (LeakyReLU)    (None, 64, 640, 128) 0           batch_normalization_3[0][0]
_________________________________________________________________________________________________
max_pooling2d_3 (MaxPooling2D)  (None, 32, 320, 128) 0           leaky_re_lu_3[0][0]
_________________________________________________________________________________________________
conv2d_4 (Conv2D)            (None, 32, 320, 256) 295168      max_pooling2d_3[0][0]
_________________________________________________________________________________________________
batch_normalization_4 (BatchNor (None, 32, 320, 256) 1024        conv2d_4[0][0]
_________________________________________________________________________________________________
leaky_re_lu_4 (LeakyReLU)    (None, 32, 320, 256) 0           batch_normalization_4[0][0]
_________________________________________________________________________________________________
max_pooling2d_4 (MaxPooling2D)  (None, 16, 160, 256) 0           leaky_re_lu_4[0][0]
_________________________________________________________________________________________________
conv2d_5 (Conv2D)            (None, 16, 160, 256) 590080      max_pooling2d_4[0][0]
_________________________________________________________________________________________________
batch_normalization_5 (BatchNor (None, 16, 160, 256) 1024        conv2d_5[0][0]
_________________________________________________________________________________________________
leaky_re_lu_5 (LeakyReLU)    (None, 16, 160, 256) 0           batch_normalization_5[0][0]
_________________________________________________________________________________________________
conv2d_6 (Conv2D)            (None, 16, 160, 256) 590080      leaky_re_lu_5[0][0]
_________________________________________________________________________________________________
batch_normalization_6 (BatchNor (None, 16, 160, 256) 1024        conv2d_6[0][0]
```

```
leaky_re_lu_6 (LeakyReLU)       (None, 16, 160, 256) 0           batch_normalization_6[0][0]
global_max_pooling2d_1 (GlobalM (None, 256)          0           leaky_re_lu_6[0][0]
dense_1 (Dense)                 (None, 256)          65792       global_max_pooling2d_1[0][0]
dense_2 (Dense)                 (None, 256)          65792       global_max_pooling2d_1[0][0]
lambda_1 (Lambda)               (None, 256)          0           dense_1[0][0]
                                                                 dense_2[0][0]
repeat_vector_1 (RepeatVector)  (None, 2560, 256)    0           lambda_1[0][0]
lambda_2 (Lambda)               (None, 256)          0           lambda_1[0][0]
reshape_1 (Reshape)             (None, 16, 160, 256) 0           repeat_vector_1[0][0]
lambda_3 (Lambda)               (None, 16, 160, 256) 0           max_pooling2d_4[0][0]
concatenate_1 (Concatenate)     (None, 512)          0           lambda_1[0][0]
                                                                 lambda_1[0][0]
concatenate_2 (Concatenate)     (None, 512)          0           lambda_1[0][0]
                                                                 lambda_2[0][0]
concatenate_3 (Concatenate)     (None, 16, 160, 512) 0           reshape_1[0][0]
                                                                 max_pooling2d_4[0][0]
concatenate_4 (Concatenate)     (None, 16, 160, 512) 0           reshape_1[0][0]
                                                                 lambda_3[0][0]
model_3 (Model)                 (None, 1)            263169      concatenate_1[0][0]
                                                                 concatenate_2[0][0]
model_4 (Model)                 multiple             263169      concatenate_3[0][0]
                                                                 concatenate_4[0][0]
==================================================================================================
Total params: 2,230,466
Trainable params: 2,228,482
Non-trainable params: 1,984
__________________________________________________________________________________________________
```

In [13]:
```
#model_train.save_weights('Music_Recommend.weights')
#model_train.save('Music_Model_100.h5')
model_train = model_train.load_weights('Music_Recommend.weights', by_name=False)
```

```
---------------------------------------------------------------------------

OSError                                   Traceback (most recent call last)

<ipython-input-13-640dab506d7d> in <module>
  1 #model_train.save_weights('Music_Recommend.weights')
  2 #model_train.save('Music_Model_100.h5')
----> 3 model_train = model_train.load_weights('Music_Recommend.weights', by_name=False)


~/.conda/envs/pythonDL/lib/python3.6/site-packages/keras/engine/network.py in load_weig
1155         if h5py is None:
1156             raise ImportError('`load_weights` requires h5py.')
-> 1157         with h5py.File(filepath, mode='r') as f:
1158             if 'layer_names' not in f.attrs and 'model_weights' in f:
1159                 f = f['model_weights']


~/.conda/envs/pythonDL/lib/python3.6/site-packages/h5py/_hl/files.py in __init__(self,
310             with phil:
311                 fapl = make_fapl(driver, libver, **kwds)
--> 312                 fid = make_fid(name, mode, userblock_size, fapl, swmr=swmr)
313
314                 if swmr_support:


~/.conda/envs/pythonDL/lib/python3.6/site-packages/h5py/_hl/files.py in make_fid(name,
140         if swmr and swmr_support:
141             flags |= h5f.ACC_SWMR_READ
--> 142         fid = h5f.open(name, flags, fapl=fapl)
143     elif mode == 'r+':
144         fid = h5f.open(name, h5f.ACC_RDWR, fapl=fapl)


h5py/_objects.pyx in h5py._objects.with_phil.wrapper()


h5py/_objects.pyx in h5py._objects.with_phil.wrapper()


h5py/h5f.pyx in h5py.h5f.open()


OSError: Unable to open file (unable to open file: name = 'Music_Recommend.weights', er
```

In [43]:
```
print(type(model_train), type(history))
```

```
<class 'keras.engine.training.Model'> <class 'keras.callbacks.History'>
```

```
In [ ]: history
```

```
In [14]: #history = model_train
         # list all data in history
         print(history.history.keys())
         # summarize history for loss
         plt.plot(history.history['loss'])
         #plt.plot(history.history['epochs'])
         plt.title('model loss')
         plt.ylabel('loss')
         plt.xlabel('epoch')
         #plt.legend(['train', 'test'], loc='upper left')
         plt.show()
```

```
        ---------------------------------------------------------------------------

        NameError                                 Traceback (most recent call last)

        <ipython-input-14-cfcd6a03e3e7> in <module>
          1 #history = model_train
          2 # list all data in history
    ----> 3 print(history.history.keys())
          4 # summarize history for loss
          5 plt.plot(history.history['loss'])


        NameError: name 'history' is not defined
```

3.0.2 zs

```
In [14]: #
         zs = encoder.predict(x_train, verbose=True)
         print(zs.mean()) #
         print(zs.std()) #
```

```
1500/1500 [==============================] - 33s 22ms/step
-0.00071388925
0.061472554
```

```
In [34]: np.savetxt('../Data/MusicVec.txt', zs, delimiter=',')
         #zs = np.loadtxt('../Data/MusicVec.txt', delimiter=',')
```

4 Music_Recommend

```
In [14]: # pictest.jpg
         #sample_knn('pic/test')
```

```
In [ ]: def chooseSimMus():
            musInputList = [236, 344, 407, 426, 744, 214, 1977, 1675, 1535, 1371]
            n = len(musInputList)
            #n = 5
            topn = 10
            #figure1 = np.zeros((img_height*n, img_weight*topn, 3))
            #figure2 = np.zeros((img_height*n, img_weight*topn, 3))
            zs_ = zs / (zs**2).sum(1, keepdims=True)**0.5
            similar_list = []
            for i , one in zip(range(n), musInputList):
                #one = 0 #0
                #one = np.random.choice(len(x_train)) #
                idxs = ((zs**2).sum(1) + (zs[one]**2).sum() - 2 * np.dot(zs, zs[one])).argsort
                similar = [one, idxs.tolist()]
                similar_list.append(similar)
            return similar_list
```

```
In [25]: def randomSimMus():
             #musInputList = [236, 344, 407, 426, 744, 214, 1977, 1675, 1535, 1371]
             n = 30
             topn = 11
             #figure1 = np.zeros((img_height*n, img_weight*topn, 3))
             #figure2 = np.zeros((img_height*n, img_weight*topn, 3))
             zs_ = zs / (zs**2).sum(1, keepdims=True)**0.5
             similar_list = []
             for i in range(n):
                 one = np.random.choice(len(x_train)) #
                 idxs = ((zs**2).sum(1) + (zs[one]**2).sum() - 2 * np.dot(zs, zs[one])).argsor
                 similar = [one, idxs.tolist()]
                 similar_list.append(similar)
             return similar_list
```

```
In [16]: #similar_list = chooseSimMus()
         similar_list = randomSimMus()
```

lena = mpimg.imread('../Data/music_l2.png') plt.figure(figsize=(30, 15)) plt.imshow(lena) # plt.axis('off') # plt.show()

```
In [17]: similar_list
```

```
Out[17]: [[721, [721, 1134, 1067, 734, 1424, 834, 52, 1103, 877, 702]],
          [1291, [1291, 199, 37, 1126, 185, 65, 465, 447, 433, 150]],
          [163, [163, 1318, 95, 734, 272, 364, 921, 1081, 808, 1477]],
          [211, [211, 988, 98, 234, 989, 93, 302, 866, 729, 536]],
```

```
 [399, [399, 319, 975, 518, 1251, 578, 745, 210, 1268, 526]],
 [634, [634, 547, 1037, 1356, 1042, 959, 997, 915, 1130, 1328]],
 [1473, [1473, 26, 308, 734, 560, 1377, 921, 635, 1462, 110]],
 [638, [638, 52, 311, 373, 95, 56, 1186, 486, 536, 549]],
 [191, [191, 1386, 1010, 583, 195, 1429, 1068, 707, 806, 645]],
 [1154, [1154, 763, 1145, 113, 54, 122, 1216, 1023, 516, 363]],
 [758, [758, 908, 210, 466, 1175, 1497, 873, 472, 337, 451]],
 [1097, [1097, 503, 291, 1388, 1328, 826, 1411, 690, 217, 485]],
 [1436, [1436, 794, 49, 1455, 1090, 526, 273, 1219, 400, 1411]],
 [1345, [1345, 882, 444, 711, 447, 96, 1084, 464, 1447, 1370]],
 [424, [424, 1284, 1237, 1050, 913, 458, 1297, 1331, 64, 1472]],
 [761, [761, 1237, 644, 811, 1272, 613, 789, 655, 629, 1043]],
 [612, [612, 1470, 287, 1178, 1239, 1406, 182, 277, 6, 462]],
 [978, [978, 128, 650, 209, 373, 115, 170, 681, 251, 486]],
 [703, [703, 49, 1032, 489, 561, 1150, 69, 1473, 426, 667]],
 [1068, [1068, 131, 248, 1443, 267, 547, 728, 1051, 583, 915]],
 [1042, [1042, 919, 149, 896, 127, 1037, 820, 481, 959, 1203]],
 [1205, [1205, 1224, 26, 1111, 1477, 49, 277, 450, 794, 141]],
 [750, [750, 263, 947, 1053, 1102, 988, 64, 1237, 857, 536]],
 [1069, [1069, 270, 364, 784, 1183, 1063, 1320, 1103, 373, 167]],
 [918, [918, 25, 447, 619, 746, 37, 373, 497, 1333, 492]],
 [797, [797, 526, 1090, 688, 1261, 1454, 792, 1413, 518, 883]],
 [826, [826, 119, 154, 1353, 217, 1055, 708, 1491, 1331, 1365]],
 [897, [897, 409, 979, 1378, 210, 110, 560, 758, 1096, 959]],
 [24, [24, 665, 764, 154, 1331, 995, 1297, 51, 245, 1388]],
 [767, [767, 1090, 1175, 1343, 908, 935, 49, 1454, 261, 883]]]
```

In [18]:
```
similar_dic = {}
for img_id, name_list in similar_list:
    similar_dic[img_id] = name_list
similar_dic
```

Out[18]:
```
{721: [721, 1134, 1067, 734, 1424, 834, 52, 1103, 877, 702],
 1291: [1291, 199, 37, 1126, 185, 65, 465, 447, 433, 150],
 163: [163, 1318, 95, 734, 272, 364, 921, 1081, 808, 1477],
 211: [211, 988, 98, 234, 989, 93, 302, 866, 729, 536],
 399: [399, 319, 975, 518, 1251, 578, 745, 210, 1268, 526],
 634: [634, 547, 1037, 1356, 1042, 959, 997, 915, 1130, 1328],
 1473: [1473, 26, 308, 734, 560, 1377, 921, 635, 1462, 110],
 638: [638, 52, 311, 373, 95, 56, 1186, 486, 536, 549],
 191: [191, 1386, 1010, 583, 195, 1429, 1068, 707, 806, 645],
 1154: [1154, 763, 1145, 113, 54, 122, 1216, 1023, 516, 363],
 758: [758, 908, 210, 466, 1175, 1497, 873, 472, 337, 451],
 1097: [1097, 503, 291, 1388, 1328, 826, 1411, 690, 217, 485],
 1436: [1436, 794, 49, 1455, 1090, 526, 273, 1219, 400, 1411],
 1345: [1345, 882, 444, 711, 447, 96, 1084, 464, 1447, 1370],
 424: [424, 1284, 1237, 1050, 913, 458, 1297, 1331, 64, 1472],
 761: [761, 1237, 644, 811, 1272, 613, 789, 655, 629, 1043],
```

```
 612: [612, 1470, 287, 1178, 1239, 1406, 182, 277, 6, 462],
 978: [978, 128, 650, 209, 373, 115, 170, 681, 251, 486],
 703: [703, 49, 1032, 489, 561, 1150, 69, 1473, 426, 667],
 1068: [1068, 131, 248, 1443, 267, 547, 728, 1051, 583, 915],
 1042: [1042, 919, 149, 896, 127, 1037, 820, 481, 959, 1203],
 1205: [1205, 1224, 26, 1111, 1477, 49, 277, 450, 794, 141],
 750: [750, 263, 947, 1053, 1102, 988, 64, 1237, 857, 536],
 1069: [1069, 270, 364, 784, 1183, 1063, 1320, 1103, 373, 167],
 918: [918, 25, 447, 619, 746, 37, 373, 497, 1333, 492],
 797: [797, 526, 1090, 688, 1261, 1454, 792, 1413, 518, 883],
 826: [826, 119, 154, 1353, 217, 1055, 708, 1491, 1331, 1365],
 897: [897, 409, 979, 1378, 210, 110, 560, 758, 1096, 959],
 24: [24, 665, 764, 154, 1331, 995, 1297, 51, 245, 1388],
 767: [767, 1090, 1175, 1343, 908, 935, 49, 1454, 261, 883]}
```

In [19]:
```
similar_arr = pd.DataFrame(similar_dic)
```

In [20]:
```
similar_arr.to_csv('../Data/SimilaryMusicIndex.csv', index=False)
similar_arr
```

Out[20]:

	721	1291	163	211	399	634	1473	638	191	1154	...	1042	\
0	721	1291	163	211	399	634	1473	638	191	1154	...	1042	
1	1134	199	1318	988	319	547	26	52	1386	763	...	919	
2	1067	37	95	98	975	1037	308	311	1010	1145	...	149	
3	734	1126	734	234	518	1356	734	373	583	113	...	896	
4	1424	185	272	989	1251	1042	560	95	195	54	...	127	
5	834	65	364	93	578	959	1377	56	1429	122	...	1037	
6	52	465	921	302	745	997	921	1186	1068	1216	...	820	
7	1103	447	1081	866	210	915	635	486	707	1023	...	481	
8	877	433	808	729	1268	1130	1462	536	806	516	...	959	
9	702	150	1477	536	526	1328	110	549	645	363	...	1203	

	1205	750	1069	918	797	826	897	24	767
0	1205	750	1069	918	797	826	897	24	767
1	1224	263	270	25	526	119	409	665	1090
2	26	947	364	447	1090	154	979	764	1175
3	1111	1053	784	619	688	1353	1378	154	1343
4	1477	1102	1183	746	1261	217	210	1331	908
5	49	988	1063	37	1454	1055	110	995	935
6	277	64	1320	373	792	708	560	1297	49
7	450	1237	1103	497	1413	1491	758	51	1454
8	794	857	373	1333	518	1331	1096	245	261
9	141	536	167	492	883	1365	959	1388	883

[10 rows x 30 columns]

In [21]:
```
img_ind_data = pd.read_csv('../Data/SimilaryMusicIndex.csv')
```

In [22]:
```
tarImgs = img_ind_data.columns.tolist()
```

```
In [23]: img_data = pd.read_csv('../Data/nameIndex.csv', names=['id', 'name'])
         img_data.head()
```

Out[23]:

	id	name
0	0	Drop Tower - Pluto (Drop Tower Remix).mp3
1	1	iris - Letter.mp3
2	2	ZENI - With You (Original Mix).mp3
3	3	Hey Oh.mp3
4	4	Let Me Love You.mp3

```
In [24]: for img_id in tarImgs:
             targetImg = img_data[img_data['id']==int(img_id)]
             targetImgName = targetImg['name'].values[0]
             simImgs = img_ind_data[img_id].values.tolist()
             print("Input Image name is:"+'\n', targetImgName)
             print('Similar Image name is:')
             for sims in simImgs:
                 #print(sims)
                 simImage = img_data[img_data['id']==int(sims)]
                 simName = simImage['name'].values[0]
                 print('\t' + os.path.join('/home/bob/Music/music_dataset', simName))
             print('\n')
```

```
Input Image name is:
 NGC 3.14 Jun Kuroda - Polaris (NGC 3.14 Remix).mp3
Similar Image name is:
        /home/bob/Music/music_dataset/NGC 3.14 Jun Kuroda - Polaris (NGC 3.14 Remix).mp3
        /home/bob/Music/music_dataset/Hampton the Hampster - The Hampster Dance Song.mp3
        /home/bob/Music/music_dataset/The Hampster Dance Song.mp3
        /home/bob/Music/music_dataset/Tyron Hapi,Mimoza - Anyway.mp3
        /home/bob/Music/music_dataset/Dragostea Din Tei (Original Romanian Version).mp3
        /home/bob/Music/music_dataset/O-Zone - Dragostea Din Tei.mp3
        /home/bob/Music/music_dataset/JULY.mp3
        /home/bob/Music/music_dataset/Emily Zeck - Two Cents (Ice Cream Song).mp3
        /home/bob/Music/music_dataset/Chromak Lilianna Wilde - Show You.mp3
        /home/bob/Music/music_dataset/Chromak,Lilianna Wilde - Show You.mp3


Input Image name is:
 K-391 - Solstice.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/K-391 - Solstice.mp3
        /home/bob/Music/music_dataset/Valcos - High Spirits.mp3
        /home/bob/Music/music_dataset/The Pussycat Dolls - I Hate This Part.flac
        /home/bob/Music/music_dataset/Eugene The Dream,Vine - Spongebob Remix Krusty Krab.mp3
        /home/bob/Music/music_dataset/So Hot.mp3
        /home/bob/Music/music_dataset/SAFIA - Over You.mp3
        /home/bob/Music/music_dataset/Mama.mp3
```

```
        /home/bob/Music/music_dataset/Trouble.mp3
        /home/bob/Music/music_dataset/Caroline Pennell,JordanXL - Lovesick (JordanXL Remix).mp3
        /home/bob/Music/music_dataset/Deadmau5 - Imaginary Friends.flac


Input Image name is:
 Feels.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Feels.mp3
        /home/bob/Music/music_dataset/Linkin Park - Waiting For The End.mp3
        /home/bob/Music/music_dataset/Lost Kings,Sabrina Carpenter - First Love.mp3
        /home/bob/Music/music_dataset/Tyron Hapi,Mimoza - Anyway.mp3
        /home/bob/Music/music_dataset/Wake Up Where You Are_State of Sound.mp3
        /home/bob/Music/music_dataset/Marc May SuzanaJ - When it's all over.mp3
        /home/bob/Music/music_dataset/Scream & Shout_will.i.am.flac
        /home/bob/Music/music_dataset/PRXZM - Forever Young (PRXZM Cover).mp3
        /home/bob/Music/music_dataset/By Your Side.mp3
        /home/bob/Music/music_dataset/FEWZ - FEWZ - Levitate.mp3


Input Image name is:
 G.E.M. -.m4a
Similar Image name is:
        /home/bob/Music/music_dataset/G.E.M. -.m4a
        /home/bob/Music/music_dataset/G.E.M. -.m4a
        /home/bob/Music/music_dataset/JC- (Live).m4a
        /home/bob/Music/music_dataset/G.E.M. - (Live).m4a
        /home/bob/Music/music_dataset/Symphony.mp3
        /home/bob/Music/music_dataset/i hate u i love u_gnash.mp3
        /home/bob/Music/music_dataset/gnash;Olivia O'Brien-i hate u i love u.mp3
        /home/bob/Music/music_dataset/Troye Sivan - Gasoline.mp3
        /home/bob/Music/music_dataset/Honest.mp3
        /home/bob/Music/music_dataset/Wonderful U (Demo Version).mp3


Input Image name is:
 Kate Havnevik-SoLo.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Kate Havnevik-SoLo.mp3
        /home/bob/Music/music_dataset/Corey Gray-Where We're Going.mp3
        /home/bob/Music/music_dataset/Sarah Harmer - One Match.mp3
        /home/bob/Music/music_dataset/Taylor Swift - The Best Day.mp3
        /home/bob/Music/music_dataset/Sarah Harmer-One Match.mp3
        /home/bob/Music/music_dataset/Tired.mp3
        /home/bob/Music/music_dataset/Wild Child_Brett Dennen.mp3
        /home/bob/Music/music_dataset/Setting Fires.mp3
        /home/bob/Music/music_dataset/Irreplaceable_Beyoncé.flac
        /home/bob/Music/music_dataset/Hayley Westenra-.m4a
```

```
Input Image name is:
 Larry Mullen Jr.,Adam Clayton - Theme from Mission Impossible.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Larry Mullen Jr.,Adam Clayton - Theme from Mission Impos
        /home/bob/Music/music_dataset/Roar_Various Artists.mp3
        /home/bob/Music/music_dataset/Lenka-Trouble Is a Friend.mp3
        /home/bob/Music/music_dataset/Trouble Is A Friend.mp3
        /home/bob/Music/music_dataset/Ei Ei.mp3
        /home/bob/Music/music_dataset/Rigel Theatre - Grad Erlija -Retrospektiva-.mp3
        /home/bob/Music/music_dataset/Roar_Katy Perry.flac
        /home/bob/Music/music_dataset/Katy Perry-Roar.mp3
        /home/bob/Music/music_dataset/String Tek.mp3
        /home/bob/Music/music_dataset/I Follow Rivers_Lykke Li.mp3


Input Image name is:
 Joel Fletcher,Bianca - Smooth Operator.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Joel Fletcher,Bianca - Smooth Operator.mp3
        /home/bob/Music/music_dataset/Tyron Hapi,Mashd N Kutcher - We Could Be.mp3
        /home/bob/Music/music_dataset/Anywhere I Go (Original Mix)_Vicetone.mp3
        /home/bob/Music/music_dataset/Tyron Hapi,Mimoza - Anyway.mp3
        /home/bob/Music/music_dataset/Tino Coury-Circles.mp3
        /home/bob/Music/music_dataset/Culture Code,Karra - Make Me Move.mp3
        /home/bob/Music/music_dataset/Scream & Shout_will.i.am.flac
        /home/bob/Music/music_dataset/RISE.mp3
        /home/bob/Music/music_dataset/Rameses B - Moonlight.flac
        /home/bob/Music/music_dataset/Hall of Fame.mp3


Input Image name is:
 Lonely Together.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Lonely Together.mp3
        /home/bob/Music/music_dataset/JULY.mp3
        /home/bob/Music/music_dataset/Chasjam - Zippo.flac
        /home/bob/Music/music_dataset/Jason Mraz - I'm Yours.mp3
        /home/bob/Music/music_dataset/Lost Kings,Sabrina Carpenter - First Love.mp3
        /home/bob/Music/music_dataset/Wolves_Selena Gomez.wav
        /home/bob/Music/music_dataset/Selena Gomez,Marshmello - Wolves.flac
        /home/bob/Music/music_dataset/Young Hearts (Axero Remix)_Axero.mp3
        /home/bob/Music/music_dataset/Wonderful U (Demo Version).mp3
        /home/bob/Music/music_dataset/ 2 .mp3


Input Image name is:
```

```
 David Arkenstone-Swirling Pools.m4a
Similar Image name is:
        /home/bob/Music/music_dataset/David Arkenstone-Swirling Pools.m4a
        /home/bob/Music/music_dataset/Oh!.mp3
        /home/bob/Music/music_dataset/Waiting For Love.mp3
        /home/bob/Music/music_dataset/I Want You to Know_Zedd.mp3
        /home/bob/Music/music_dataset/Does It Offend You, Yeah - All The Same.mp3
        /home/bob/Music/music_dataset/The Phoenix.mp3
        /home/bob/Music/music_dataset/Multex - My Angel.mp3
        /home/bob/Music/music_dataset/idealism,jinsang - winter bokeh.mp3
        /home/bob/Music/music_dataset/Go Time.mp3
        /home/bob/Music/music_dataset/Stadiumx,Baha,Markquis - Another Life (Radio Edit).mp3


Input Image name is:
 John Mayer,Taylor Swift - Half of My Heart.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/John Mayer,Taylor Swift - Half of My Heart.mp3
        /home/bob/Music/music_dataset/Kondor - Day Dreamin.mp3
        /home/bob/Music/music_dataset/Look To Me_Azure Ray.mp3
        /home/bob/Music/music_dataset/BEYOND-.m4a
        /home/bob/Music/music_dataset/Remedios-Island.m4a
        /home/bob/Music/music_dataset/Tomorrow.mp3
        /home/bob/Music/music_dataset/Lobo - I'd Love You To Want Me.mp3
        /home/bob/Music/music_dataset/Super Star.mp3
        /home/bob/Music/music_dataset/Capo Productions - Real.mp3
        /home/bob/Music/music_dataset/Taylor Swift - Tied Together With A Smile.mp3


Input Image name is:
 Taylor Swift - Tell Me Why.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Taylor Swift - Tell Me Why.mp3
        /home/bob/Music/music_dataset/Taylor Swift-Sparks Fly.mp3
        /home/bob/Music/music_dataset/Setting Fires.mp3
        /home/bob/Music/music_dataset/Taylor Swift - Crazier.mp3
        /home/bob/Music/music_dataset/Electus - Peace Of Mind.mp3
        /home/bob/Music/music_dataset/ (SID)- ().m4a
        /home/bob/Music/music_dataset/Taylor Swift - Fifteen.mp3
        /home/bob/Music/music_dataset/secret base ~~ (10 years after Ver).mp3
        /home/bob/Music/music_dataset/Dexter Britain - Summit.mp3
        /home/bob/Music/music_dataset/Friends (Rock Mafia & David Jo_Aura Dione.mp3


Input Image name is:
 Rhian Sheehan - La Boite a Musique.flac
Similar Image name is:
        /home/bob/Music/music_dataset/Rhian Sheehan - La Boite a Musique.flac
```

```
        /home/bob/Music/music_dataset/Deadmau5 - Snowcone.flac
        /home/bob/Music/music_dataset/Xyron - Our Destiny Lies Above Us (Xyron Remix).mp3
        /home/bob/Music/music_dataset/Robert de Boron - Chiru (Saisei no Uta).mp3
        /home/bob/Music/music_dataset/I Follow Rivers_Lykke Li.mp3
        /home/bob/Music/music_dataset/LeeAlive - (OriginalăMix).flac
        /home/bob/Music/music_dataset/Libera-Sing For Ever.m4a
        /home/bob/Music/music_dataset/Novo Amor - Cold.mp3
        /home/bob/Music/music_dataset/Frank_Jiang - Aqua.flac
        /home/bob/Music/music_dataset/Eden's Bridge-Into The Light (Eden's Bridge 2002 Remixed


Input Image name is:
 We Won't Be Alone_Feint.wav
Similar Image name is:
        /home/bob/Music/music_dataset/We Won't Be Alone_Feint.wav
        /home/bob/Music/music_dataset/G.E.M. - (Live).m4a
        /home/bob/Music/music_dataset/Infinity_Ahxello.mp3
        /home/bob/Music/music_dataset/Fool's Garden-Lemon Tree.mp3
        /home/bob/Music/music_dataset/Trip_Axero.mp3
        /home/bob/Music/music_dataset/Hayley Westenra-.m4a
        /home/bob/Music/music_dataset/Nick Lachey - I Can't Hate You Anymore - Main Version.mp3
        /home/bob/Music/music_dataset/ (SID)- ().m4a
        /home/bob/Music/music_dataset/Dream It Possible.mp3
        /home/bob/Music/music_dataset/Libera-Sing For Ever.m4a


Input Image name is:
 Emily Vaughn - Over That.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Emily Vaughn - Over That.mp3
        /home/bob/Music/music_dataset/- (Mannequin).m4a
        /home/bob/Music/music_dataset/Charlie Puth - How Long.flac
        /home/bob/Music/music_dataset/NLSN - Tattoo on My Face.mp3
        /home/bob/Music/music_dataset/Trouble.mp3
        /home/bob/Music/music_dataset/Heartbeat_.mp3
        /home/bob/Music/music_dataset/Closer_Various Artists.mp3
        /home/bob/Music/music_dataset/Never Be Alone_TheFatRat.wav
        /home/bob/Music/music_dataset/Got It_Marian Hill.mp3
        /home/bob/Music/music_dataset/Closer.mp3


Input Image name is:
 Skylar Grey-Coming Home.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Skylar Grey-Coming Home.mp3
        /home/bob/Music/music_dataset/Lemon.mp3
        /home/bob/Music/music_dataset/Sky (Radio Edit).mp3
        /home/bob/Music/music_dataset/Ryan Farish - Legacy.mp3
```

```
        /home/bob/Music/music_dataset/Celtic Woman-Down by the Sally Gardens.m4a
        /home/bob/Music/music_dataset/Martin Mittone - Horizon of Time.flac
        /home/bob/Music/music_dataset/Holding_Rachel Stevener.mp3
        /home/bob/Music/music_dataset/Lindequist - Serenity.mp3
        /home/bob/Music/music_dataset/BEYOND-.m4a
        /home/bob/Music/music_dataset/Stargazing.mp3


Input Image name is:
 Mr.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Mr.mp3
        /home/bob/Music/music_dataset/Sky (Radio Edit).mp3
        /home/bob/Music/music_dataset/Gee.mp3
        /home/bob/Music/music_dataset/Groove Coverage-God Is a Girl.mp3
        /home/bob/Music/music_dataset/God Is a Girl_Groove Coverage.flac
        /home/bob/Music/music_dataset/Vanessa Hudgens - When There Was Me And You.mp3
        /home/bob/Music/music_dataset/Solo Dance_Martin Jensen.mp3
        /home/bob/Music/music_dataset/Mr. Saxobeat_Alexandra Stan.flac
        /home/bob/Music/music_dataset/Solo Dance.mp3
        /home/bob/Music/music_dataset/Just Hold On.mp3


Input Image name is:
 Lucian Jasmine Sokko - Close to You.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Lucian Jasmine Sokko - Close to You.mp3
        /home/bob/Music/music_dataset/Close to You(feat. Jasmine Sok_Lucian.mp3
        /home/bob/Music/music_dataset/Rollin.mp3
        /home/bob/Music/music_dataset/S&M_Rihanna.ape
        /home/bob/Music/music_dataset/Panama_Matteo.wav
        /home/bob/Music/music_dataset/Tik Tok_Kesha.mp3
        /home/bob/Music/music_dataset/Panama.mp3
        /home/bob/Music/music_dataset/Extreme (Original Mix)_KSHMR.mp3
        /home/bob/Music/music_dataset/Aankhen Khuli.mp3
        /home/bob/Music/music_dataset/DEVIN K - Rendezvous.flac


Input Image name is:
 Stronger.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Stronger.mp3
        /home/bob/Music/music_dataset/Studio Allstars - Never Had A Dream Come True.mp3
        /home/bob/Music/music_dataset/Taylor Swift - You're Not Sorry.mp3
        /home/bob/Music/music_dataset/Get Low.mp3
        /home/bob/Music/music_dataset/Jason Mraz - I'm Yours.mp3
        /home/bob/Music/music_dataset/D1ofaquavibe - The Party Troll.mp3
        /home/bob/Music/music_dataset/Swish Swish.mp3
```

```
        /home/bob/Music/music_dataset/Special_Six60.mp3
        /home/bob/Music/music_dataset/Dreamin'_Damien Lauretta.mp3
        /home/bob/Music/music_dataset/Young Hearts (Axero Remix)_Axero.mp3


Input Image name is:
 Nyte - Atlas.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Nyte - Atlas.mp3
        /home/bob/Music/music_dataset/Infinity_Ahxello.mp3
        /home/bob/Music/music_dataset/Right Now (Na Na Na)_Akon.mp3
        /home/bob/Music/music_dataset/Right Now (Na Na Na).mp3
        /home/bob/Music/music_dataset/Kelly Clarkson - Stronger (What Doesn't Kill You).mp3
        /home/bob/Music/music_dataset/Monody (Radio Edit).mp3
        /home/bob/Music/music_dataset/Monody.mp3
        /home/bob/Music/music_dataset/Joel Fletcher,Bianca - Smooth Operator.mp3
        /home/bob/Music/music_dataset/BKAYE machineheart - Stonecold (BKAYE Remix).mp3
        /home/bob/Music/music_dataset/High Maintenance_Miranda Cosgrove.mp3


Input Image name is:
 Multex - My Angel.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Multex - My Angel.mp3
        /home/bob/Music/music_dataset/Alive.mp3
        /home/bob/Music/music_dataset/Thunse,CooZoc - .flac
        /home/bob/Music/music_dataset/Chris Brown - With You.mp3
        /home/bob/Music/music_dataset/Ritual (Original Mix).mp3
        /home/bob/Music/music_dataset/Roar_Various Artists.mp3
        /home/bob/Music/music_dataset/Fighter_Christina Aguilera.flac
        /home/bob/Music/music_dataset/Fallin'_Poema.mp3
        /home/bob/Music/music_dataset/I Want You to Know_Zedd.mp3
        /home/bob/Music/music_dataset/Katy Perry-Roar.mp3


Input Image name is:
 Ei Ei.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Ei Ei.mp3
        /home/bob/Music/music_dataset/Leave It All To Shine (Featuri_Victoria Justice.mp3
        /home/bob/Music/music_dataset/Lindsey Stirling - Senbonzakura [SS-Extended+Bass].mp3
        /home/bob/Music/music_dataset/John Dreamer - Becoming a Legend.mp3
        /home/bob/Music/music_dataset/The Deysion - Perfect Day feat. R.I.B.mp3
        /home/bob/Music/music_dataset/Lenka-Trouble Is a Friend.mp3
        /home/bob/Music/music_dataset/Jim Yosef - Link.mp3
        /home/bob/Music/music_dataset/The Deysion - Perfect Day (feat. RIB).mp3
        /home/bob/Music/music_dataset/Rigel Theatre - Grad Erlija -Retrospektiva-.mp3
        /home/bob/Music/music_dataset/Claux - ă(Instrumental).flac
```

```
Input Image name is:
 Betsy Blue Yves V Matthew Hill - Stay.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Betsy Blue Yves V Matthew Hill - Stay.mp3
        /home/bob/Music/music_dataset/On the Floor_Various Artists.mp3
        /home/bob/Music/music_dataset/Tyron Hapi,Mashd N Kutcher - We Could Be.mp3
        /home/bob/Music/music_dataset/Hymn For The Weekend (Alan Wal_Alan Walker.mp3
        /home/bob/Music/music_dataset/FEWZ - FEWZ - Levitate.mp3
        /home/bob/Music/music_dataset/Infinity_Ahxello.mp3
        /home/bob/Music/music_dataset/Extreme (Original Mix)_KSHMR.mp3
        /home/bob/Music/music_dataset/Silence.mp3
        /home/bob/Music/music_dataset/G.E.M. - (Live).m4a
        /home/bob/Music/music_dataset/Nyte - Pluto.mp3


Input Image name is:
 Hayley Westenra-Let Me Lie.m4a
Similar Image name is:
        /home/bob/Music/music_dataset/Hayley Westenra-Let Me Lie.m4a
        /home/bob/Music/music_dataset/Because of You.mp3
        /home/bob/Music/music_dataset/Twins-.m4a
        /home/bob/Music/music_dataset/Kelly Clarkson - Because Of You (1).mp3
        /home/bob/Music/music_dataset/SING-.m4a
        /home/bob/Music/music_dataset/G.E.M. -.m4a
        /home/bob/Music/music_dataset/BEYOND-.m4a
        /home/bob/Music/music_dataset/Sky (Radio Edit).mp3
        /home/bob/Music/music_dataset/Big Big World.mp3
        /home/bob/Music/music_dataset/Wonderful U (Demo Version).mp3


Input Image name is:
 TheFatRat - Unity.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/TheFatRat - Unity.mp3
        /home/bob/Music/music_dataset/Justin Timberlake,Black Eyed Peas - Where Is The Love.mp3
        /home/bob/Music/music_dataset/Marc May SuzanaJ - When it's all over.mp3
        /home/bob/Music/music_dataset/Shontelle - T-Shirt - Main.mp3
        /home/bob/Music/music_dataset/The Band Perry-If I Die Young.mp3
        /home/bob/Music/music_dataset/The Sweet Escape_Gwen Stefani.flac
        /home/bob/Music/music_dataset/Justin Bieber - One Time.mp3
        /home/bob/Music/music_dataset/Emily Zeck - Two Cents (Ice Cream Song).mp3
        /home/bob/Music/music_dataset/Jason Mraz - I'm Yours.mp3
        /home/bob/Music/music_dataset/Deadmau5 - Digitol.flac


Input Image name is:
```

```
 All I See_Kylie Minogue.flac
Similar Image name is:
        /home/bob/Music/music_dataset/All I See_Kylie Minogue.flac
        /home/bob/Music/music_dataset/Your Love Shot Me Down_PAWL.mp3
        /home/bob/Music/music_dataset/Trouble.mp3
        /home/bob/Music/music_dataset/Loote - High Without Your Love.mp3
        /home/bob/Music/music_dataset/Deadmau5,Rob Swire - Ghosts 'n' Stuff.flac
        /home/bob/Music/music_dataset/The Pussycat Dolls - I Hate This Part.flac
        /home/bob/Music/music_dataset/Jason Mraz - I'm Yours.mp3
        /home/bob/Music/music_dataset/Kory Burns - Count the Ways (Main Mix).mp3
        /home/bob/Music/music_dataset/Josh Vietti - Where Is the Love.flac
        /home/bob/Music/music_dataset/Josh Vietti - Because of You.flac


Input Image name is:
 BEYOND- ().m4a
Similar Image name is:
        /home/bob/Music/music_dataset/BEYOND- ().m4a
        /home/bob/Music/music_dataset/Hayley Westenra-.m4a
        /home/bob/Music/music_dataset/Trip_Axero.mp3
        /home/bob/Music/music_dataset/Jared Lee - Out of Breath.mp3
        /home/bob/Music/music_dataset/Sarah Brightman-.m4a
        /home/bob/Music/music_dataset/Michael Bublé - Everything.mp3
        /home/bob/Music/music_dataset/Niall Horan-This Town.mp3
        /home/bob/Music/music_dataset/Frida Amundsen-Someone Make Me Cry.mp3
        /home/bob/Music/music_dataset/Taylor Swift - The Best Day.mp3
        /home/bob/Music/music_dataset/Engelbert Humperdinck - Nothing's Gonna Change My Love f


Input Image name is:
 LeeAlive - (OriginalăMix).flac
Similar Image name is:
        /home/bob/Music/music_dataset/LeeAlive - (OriginalăMix).flac
        /home/bob/Music/music_dataset/Rameses B - Every Cloud.flac
        /home/bob/Music/music_dataset/Medwyn Goodall-Farewell To The Darkness.m4a
        /home/bob/Music/music_dataset/Chloe Agnew-Walking In The Air.m4a
        /home/bob/Music/music_dataset/Frank_Jiang - Aqua.flac
        /home/bob/Music/music_dataset/Philter - Dance Of The Fireflies.mp3
        /home/bob/Music/music_dataset/The One.mp3
        /home/bob/Music/music_dataset/Chloe Agnew-To Where You Are.m4a
        /home/bob/Music/music_dataset/Lindequist - Serenity.mp3
        /home/bob/Music/music_dataset/Illuminate_The Kite String Tangle.mp3


Input Image name is:
 Just the Way You Are_Bruno Mars.flac
Similar Image name is:
        /home/bob/Music/music_dataset/Just the Way You Are_Bruno Mars.flac
```

```
        /home/bob/Music/music_dataset/Guardians_Au5.wav
        /home/bob/Music/music_dataset/Mariah Carey - I Stay In Love.flac
        /home/bob/Music/music_dataset/Matt Beilis - We've Been Here Before.mp3
        /home/bob/Music/music_dataset/Setting Fires.mp3
        /home/bob/Music/music_dataset/Hall of Fame.mp3
        /home/bob/Music/music_dataset/Tino Coury-Circles.mp3
        /home/bob/Music/music_dataset/Taylor Swift - Tell Me Why.mp3
        /home/bob/Music/music_dataset/Zara Larsson-Uncover.mp3
        /home/bob/Music/music_dataset/Rigel Theatre - Grad Erlija -Retrospektiva-.mp3


Input Image name is:
 Grenade_Bruno Mars.flac
Similar Image name is:
        /home/bob/Music/music_dataset/Grenade_Bruno Mars.flac
        /home/bob/Music/music_dataset/Gábor Boldoczki-Trumpet Concerto in E-Flat Major - I. Al
        /home/bob/Music/music_dataset/See You Again_Various Artists.mp3
        /home/bob/Music/music_dataset/Medwyn Goodall-Farewell To The Darkness.m4a
        /home/bob/Music/music_dataset/Lindequist - Serenity.mp3
        /home/bob/Music/music_dataset/Samsara (feat. Emila) -Instrum_Tungevaag & Raaban.mp3
        /home/bob/Music/music_dataset/Holding_Rachel Stevener.mp3
        /home/bob/Music/music_dataset/Diana Vickers - Jumping Into Rivers.mp3
        /home/bob/Music/music_dataset/See You Again.mp3
        /home/bob/Music/music_dataset/Robert de Boron - Chiru (Saisei no Uta).mp3


Input Image name is:
 Run Away With Me_Charity Vance.mp3
Similar Image name is:
        /home/bob/Music/music_dataset/Run Away With Me_Charity Vance.mp3
        /home/bob/Music/music_dataset/Trip_Axero.mp3
        /home/bob/Music/music_dataset/Electus - Peace Of Mind.mp3
        /home/bob/Music/music_dataset/Christina Perri - A Thousand Years.mp3
        /home/bob/Music/music_dataset/Taylor Swift-Sparks Fly.mp3
        /home/bob/Music/music_dataset/Jennifer Thomas - Illumination.mp3
        /home/bob/Music/music_dataset/Infinity_Ahxello.mp3
        /home/bob/Music/music_dataset/Michael Bublé - Everything.mp3
        /home/bob/Music/music_dataset/James Blunt - You're Beautiful.mp3
        /home/bob/Music/music_dataset/Engelbert Humperdinck - Nothing's Gonna Change My Love f
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In [ ]: