IMAGE PROCESSING MODEL

-Large Scale Memory Storage and Retrieval(LAMSTAR) Network-

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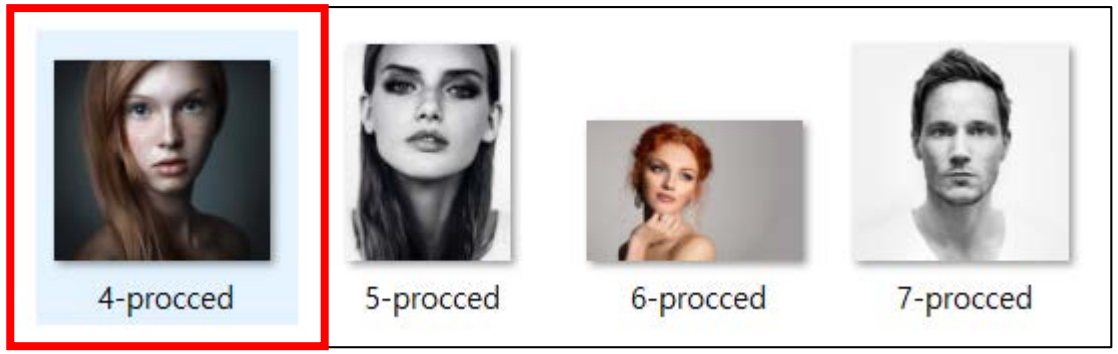
01 Trial

여러 장의 인물 사진을 사용하여 lamstar의 accuracy를 확인하였다.

Test를 위해 임의의 인물 사진을 training set과 test set에 넣고, 단 한 장의 동일한 사진이 각각의 set에 있도록 한다.

Training set

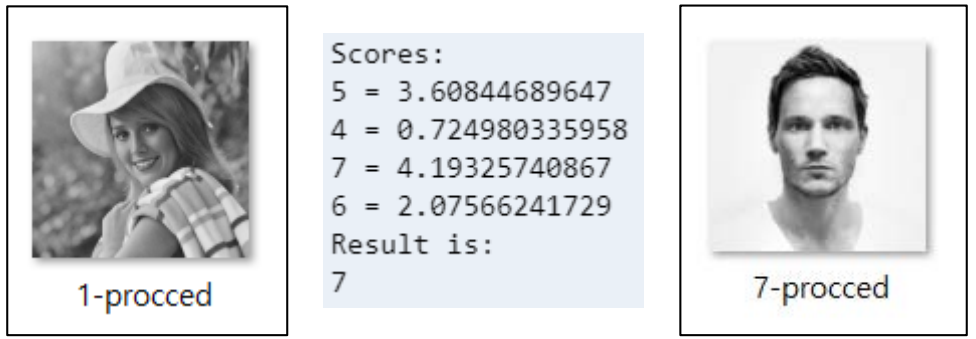


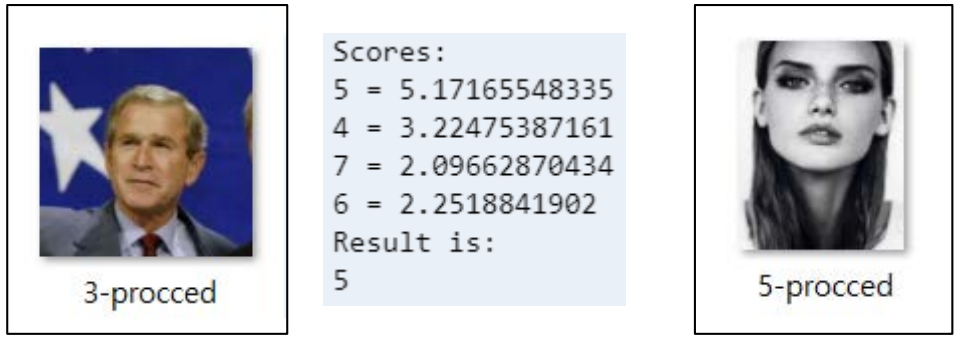
Test set

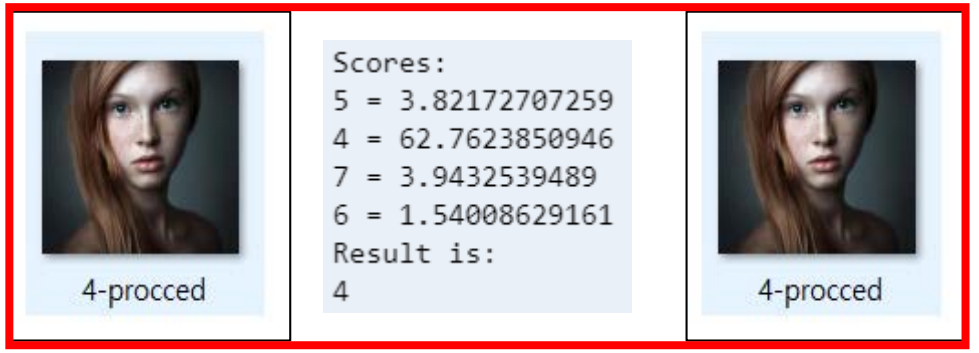
02 Run

LAMSTAR를 실행시키면, BMU(best matching unit)을 계산하여 각 test set과 가장 유사한 사진의 score을 높게 출력한다.

Test set







Training set

BMU(Best Matching Unit) 연산 : Distance가 가장 작은 값을 Select한다.

```
Added default node:
Distance: 0.111932694968
Added default node:
Distance: 0.112364929585
Added default node:
Distance: 0.154068302103
Added default node:
Distance: 0.123040756204
Added default node:
Distance: 0.114709775026
Added default node:
Distance: 0.11330620076
Added default node:
Distance: 0.154597557819
Added default node:
Distance: 0.127429938477
Added default node:
Distance: 0.120298766938
Added default node:
Distance: 0.130072140662
Added default node:
Distance: 0.128152955461
Added default node:
Distance: 0.126656030734
Added default node:
Distance: 0.143319234444
Added default node:
```

```
Distance: 0.132397237412
Added default node:
Distance: 0.113252072724
Added default node:
Distance: 0.14265951043
Added default node:
Distance: 0.127548195933
Added default node:
Distance: 0.118111315035
Added default node:
Distance: 0.109230783232
Added default node:
Distance: 0.122770369478
Added default node:
Distance: 0.10890980861
Added default node:
Distance: 0.162271310731
Added default node:
Distance: 0.161413476844
Added default node:
Distance: 0.16111622712
Added default node:
Distance: 0.162233447489
Added default node:
Distance: 0.161765109437
Added default node:
Distance: 0.159319839367
Added default node:
Distance: 0.1620732965
Added default node:
Distance: 0.163680403506
```

02 Run

Iteration : 이미지를 training할 iteration 수를 지정할 수 있다. 시간의 단축을 위해 9번으로 설정하였다.

```
Iteration no:9
```

Accuracy : test set과 training set이 일치하는 횟수를 퍼센트(%)로 나타낸 것.
이 경우 training set에서 test set과 일치하는 사진이 한 장 있으므로 1/3 * 100 = 0.33 * 100 = 33 (%)

```
(1.0, 3.0)
Accuracy = 33.3333333333%
```

03 Code Modification

1. 코드에 불필요한 변수 및 함수들을 삭제 (예 : LinkTable)

2. runConsole.py 와 Lamstar.py 의 문제가 되는 코드 부분적으로 수정 -> Lamstar 정상 작동

```
16      def __init__(self):
17          self.trainingDir = 'data/images/'
18          self.trainPat = self.trainingDir + 'ORL.pat'
19          self.testingDir = 'data/images2/'
20          self.testPat = self.testingDir + 'unseen.pat'
21          self.debug = 1
22          self.prepareTraining()
23          self.prepareTesting()
24          self.train('train')
25          self.train('test')
```

```
59      def train(self, bywho):
60          allSamples = goodSamples = 0.0
61          self.log('Starting the real training...', 'main')
62          if bywho == 'train':
63              procData = processData(self.trainPat)
64              result = procData.readContents()
65              print("result", len(result))
66              data = inputData()
67              data.addAll(result)
68              self.ls = Lamstar.lamstar(15, 1)
69              for iter in range(10):
70                  print('Iteration %s' % iter)
71                  for i in range(data.getCount()):
72  #                     print('Training data : ', i)
73  #                     self.arr2Image(data.getWholeArray(i),'input')
74  #                     raw_input('Enter')
75                      self.ls.train(data.getSubWords(i), data.getOutputs(i))
76                  if(self.debug > 0):
77                      self.log('Iteration no:' + str(iter), 'main')
78                      self.log('No of nodes' + str(self.ls.getNoOfNodes()), 'main')
```