Assignment 2

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Question 2:

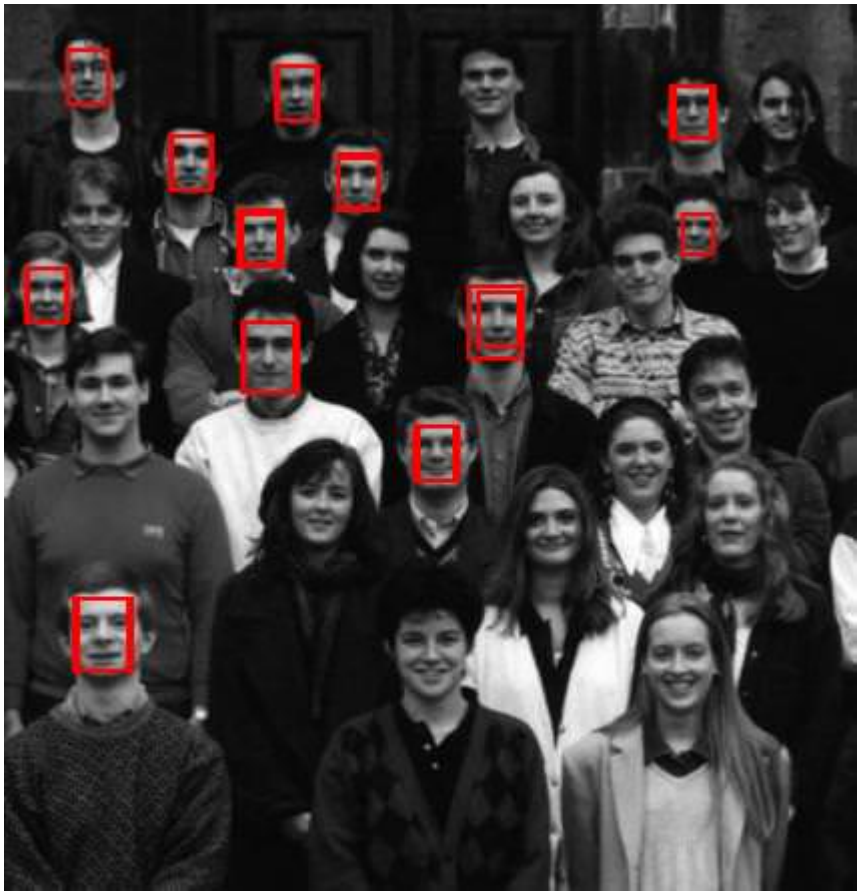
```
>>> from a2 import *
>>> im = Image.open("faces/students.jpg")
>>> minsize = 20
>>> pyramid = MakePyramid(im, minsize)
>>> pyramid
[<PIL.Image.Image image mode=L size=426x443 at 0x7F042AFCF9D0>,
<PIL.Image.Image image mode=L size=319x332 at 0x7F042AFCFA10>,
<PIL.Image.Image image mode=L size=239x249 at 0x7F042AFCFA50>,
<PIL.Image.Image image mode=L size=179x186 at 0x7F042AFCFA90>,
<PIL.Image.Image image mode=L size=134x140 at 0x7F042AFCFAD0>,
<PIL.Image.Image image mode=L size=101x105 at 0x7F042AFCFB10>,
<PIL.Image.Image image mode=L size=75x78 at 0x7F042AFCFB50>,
<PIL.Image.Image image mode=L size=56x59 at 0x7F042AFCFB90>,
<PIL.Image.Image image mode=L size=42x44 at 0x7F042AFCFBD0>,
<PIL.Image.Image image mode=L size=31x33 at 0x7F042AFCFC10>,
<PIL.Image.Image image mode=L size=23x24 at 0x7F042AFCFC50>]
```

Question 3:

```
>>> from a2 import *
>>> im = Image.open("faces/students.jpg")
>>> minsize = 20
>>> ShowPyramid(pyramid)
```

Question 4:

```
>>> im = Image.open("faces/students.jpg")
>>> minsize = 20
>>> lPyramid = MakePyramid(im, minsize)
>>> template = Image.open("faces/template.jpg")
>>> findTemplate(lPyramid, template,0.72)
```

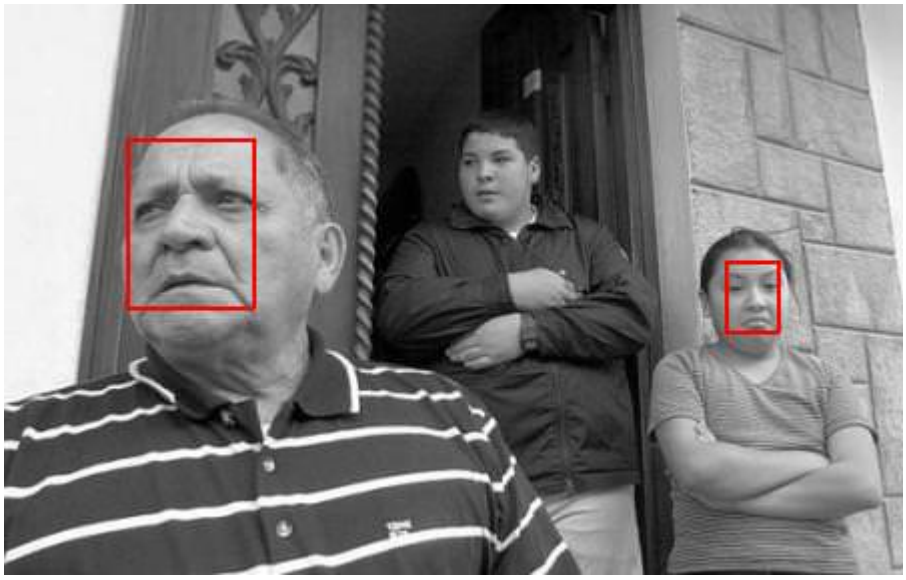


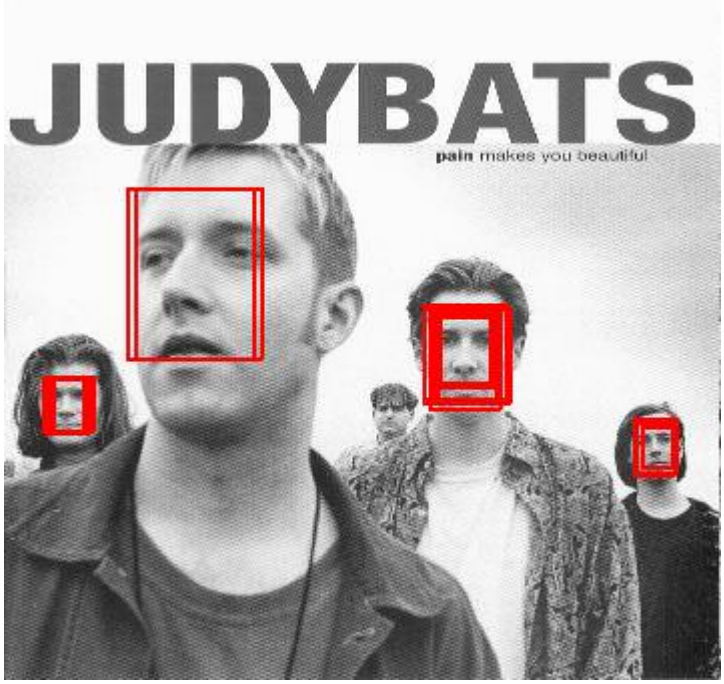
```
>>>im1 = Image.open("faces/students.jpg")
>>>im2 = Image.open("faces/judybats.jpg")
>>>im3 = Image.open("faces/tree.jpg")
>>>im4 = Image.open("faces/family.jpg")
>>>im5 = Image.open("faces/fans.jpg")
>>>im6 = Image.open("faces/sports.jpg")
>>>template = Image.open("faces/template.jpg")
>>>minsize = 15
>>>#load the pyramids
>>>pyramid1 = MakePyramid(im1, minsize)
>>>pyramid2 = MakePyramid(im2, minsize)
>>>pyramid3 = MakePyramid(im3, minsize)
>>>pyramid4 = MakePyramid(im4, minsize)
>>>pyramid5 = MakePyramid(im5, minsize)
>>>pyramid6 = MakePyramid(im6, minsize)
>>>threshold = 0.585
>>>findTemplate(pyramid1, template,threshold)
>>># Student faces not seen as faces: 4
>>># Student faces seen as faces: 22
```

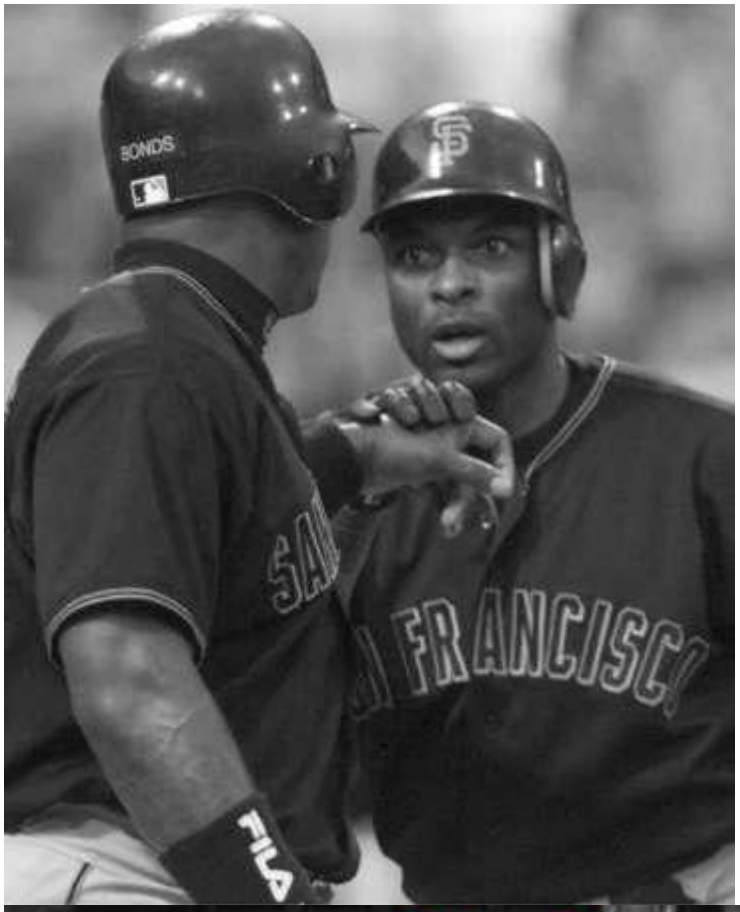
```
>>># Non Faces seen as Faces: 3
>>>findTemplate(pyramid2, template,threshold)
>>># Judybats faces not seen as faces: 1
>>># Judybats faces seen as faces: 4
>>># Non faces as seen as face: 0
>>>findTemplate(pyramid3, template,threshold)
>>># Faces not seen as faces: 0
>>># Faces seen as faces: 0
>>># Non faces seen as faces:2
>>>findTemplate(pyramid4, template,threshold)
>>># faces not seen as faces: 1
>>># faces seen as faces: 2
>>># non faces seen as faces: 0
>>>findTemplate(pyramid5, template,threshold)
>>># faces not seen as faces: 2
>>># faces seen as faces: 0
>>># non faces seen as faces: 0
>>>findTemplate(pyramid6, template,threshold)
>>># faces not seen as faces: 3
>>># faces seen as faces: 0
>>># non faces seen as faces: 4
```

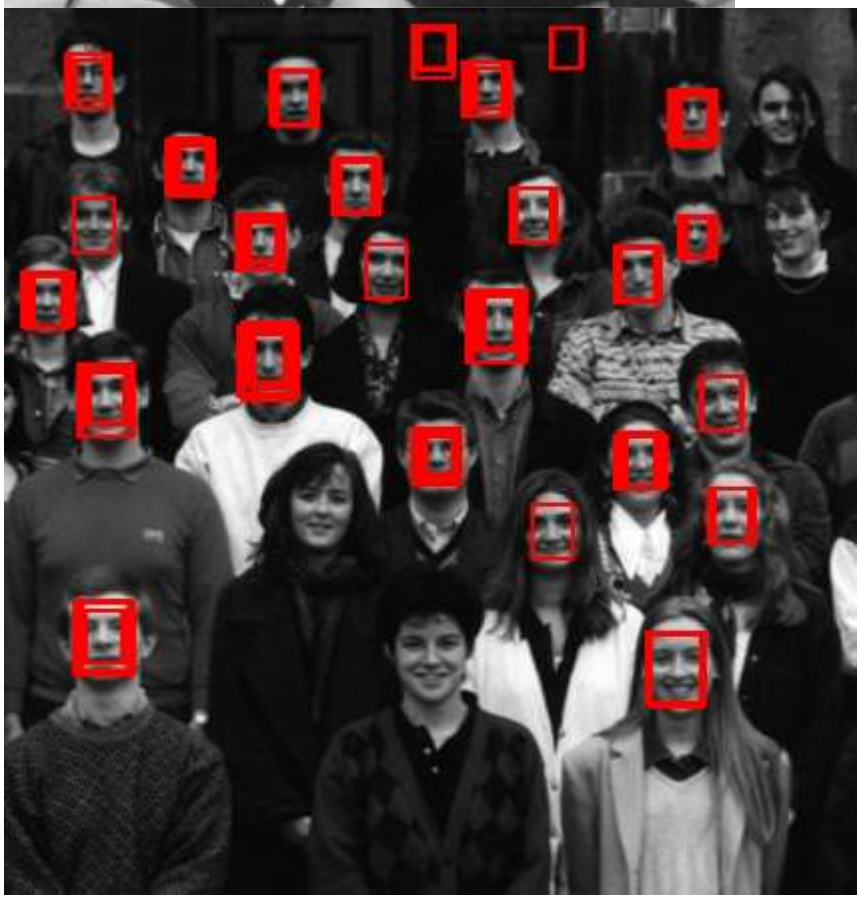
Using a threshold of: 0.585

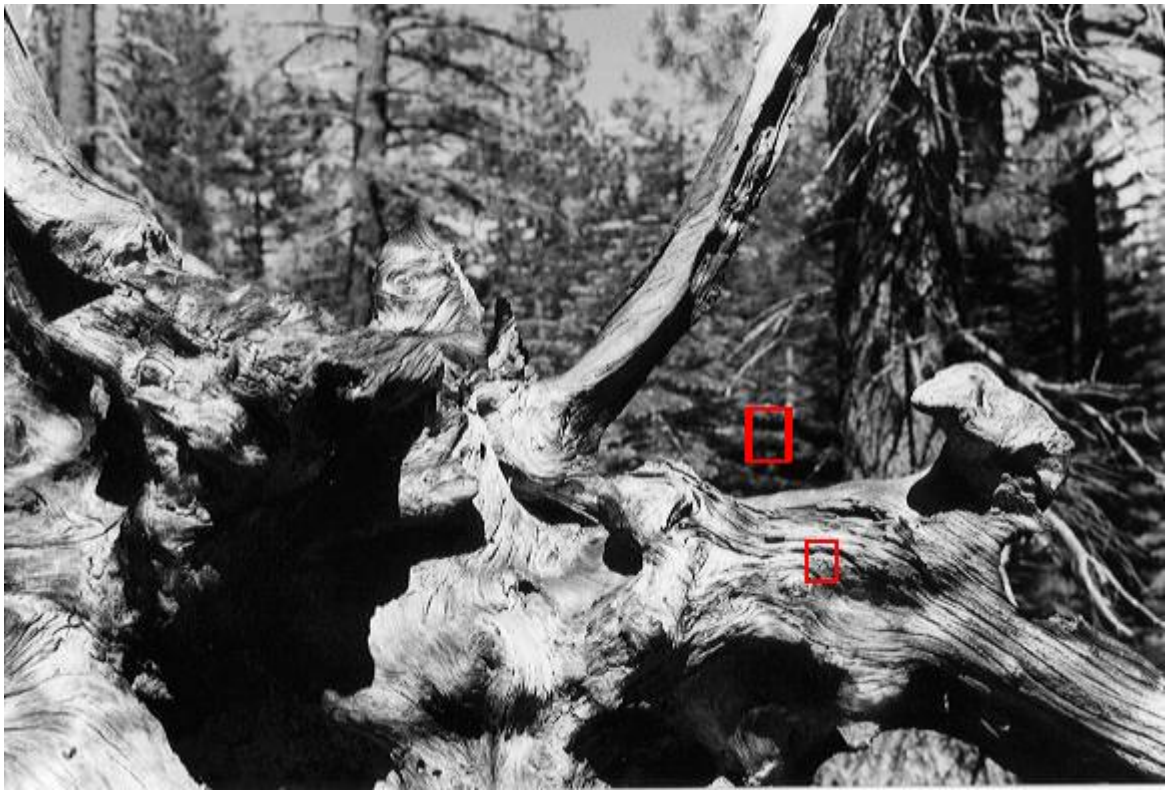
Images:




JUDYBATS
pain makes you beautiful


BONDS
FRANCISC
FILA





Question 6:

NCC is a measure of similarity between two images, it computes a value depending on how relatively similar the images are. So if we have a template of face A then it will only really look for face A instead of looking for a face. Thus, it will have a lower recall rate on some images since some of the faces differ from face A.

Recall = (# Relevant found)/(# Relevant)

Recall rate for family: 2/3

Recall rate for fans: 0/3

Recall rate for Judybats: 4/5

Recall rate for sports: 0/2

Recall rate for students: 23/27

Recall rate for tree: 0/0