Assignment 7

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Assignment 7

- Develop a program which detects a face at certain distance
  - Read Faces.mp4
  - When the user presses 'n', it should detect the nearest face
  - When the user presses 'f', it should detect the farthest face
  - When the user presses 'm', it should detect the face at the middle range
  - When the user presses 'r', it should reset program
  - The program should display text where the face is(n,m,f) in the bounding rectangle

- When the user presses 't', it should track only the region of face you chose
  - If the user presses 'n'(nearest), and next press 't'(tracking), your program should display another window to show face -> 'tracking'. Another window is just background(255,0,0)->(blue)
  - If the user presses 't' without previously pressing any keys(n,f,m), the program should alert text message("Detect before tracking") to user. It is impossible to track without any detection.
  - When the user presses 't' again, program should destroy 'tracking' window

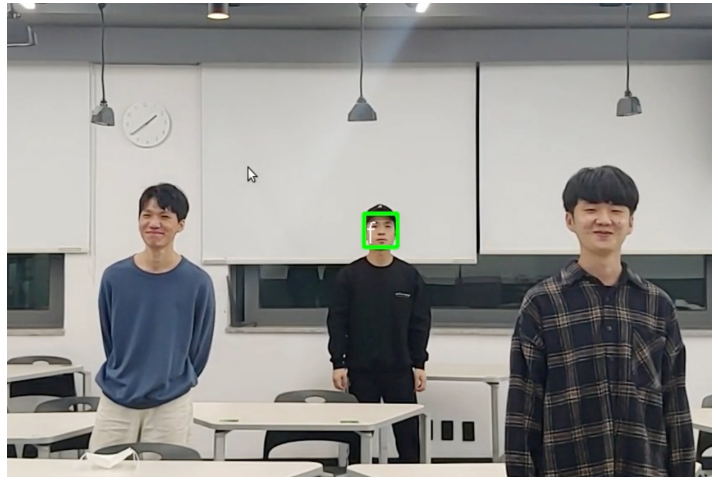
Assignment 7

- You should detect only one face at a time.
  - To do this, you should edit min_size and max_size parameters in detectMultiScale function
    - f : min[35] , max[45]
    - m : min[45] , max[60]
    - n : min[65] , max[80]

    (It is an approximate value. You can edit these range)

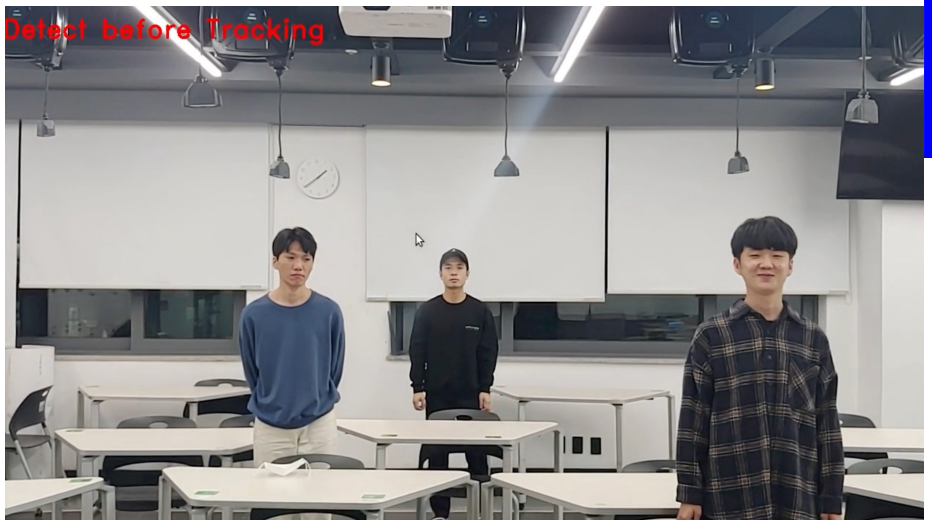
Assignment 7

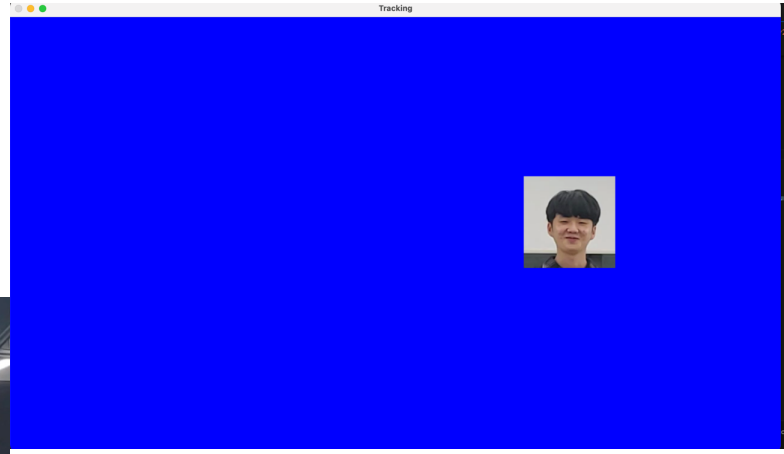
- Your program should display two windows
  - ‘Faces’ : It should display the original video with the bounding rectangle
  - ‘tracking’ : it should display only the region of face on the blue background



When the user presses ‘f’

When the user presses ‘t’, without pressing n,m,f previously





When the user presses ‘t’ with pressing ‘n’ previously

Exercise 9

Exercise 9

- Calculate the integral image of the input image

1	1	1	1	1
1	3	7	2	1
1	8	4	1	1
1	2	3	5	1
1	1	1	1	1

Exercise 9

- Explain the meaning of the last two parameters.

```
void cv::CascadeClassifier::detectMultiScale ( InputArray          image,
                                               std::vector< Rect > & objects,
                                               std::vector< int > & numDetections,
                                               scaleFactor =
                                               double              1.1,
                                               minNeighbors =
                                               int                 3,
                                               int                 flags = 0,
                                               Size                minSize = Size(),
                                               Size                maxSize = Size()
```

Exercise 9

- Perform histogram back-projection for the current image (on the right). The ROI is set as bold rectangle area on the left. Assume dynamic range of image is from 0 to 7, and set the number of bins as 8.

1	1	1	1	1
1	1	**3**	**4**	1
1	2	**3**	**5**	1
1	2	2	2	1
1	2	2	2	2

1	1	1	1	1
1	3	4	2	2
1	3	3	5	2
1	1	1	1	2
1	1	1	1	1

Exercise 9

- Explain the meaning of the 7th and 8th parameters.

◆ calcOpticalFlowPyrLK()

```
void cv::calcOpticalFlowPyrLK ( InputArray         prevImg,
                                InputArray         nextImg,
                                InputArray         prevPts,
                                InputOutputArray   nextPts,
                                OutputArray        status,
                                OutputArray        err,
                                Size               winSize = Size(21, 21),
                                int                maxLevel = 3,
                                TermCriteria       criteria = TermCriteria(TermCriteria::COUNT+TermCriteria::EPS, 30, 0.01),
                                int                flags = 0,
                                double             minEigThreshold = 1e-4
                              )
```