Université Paris-Est Créteil (UPEC)

International Master of Biometrics and
Intelligent Vision

https://www.international-master-biometrics-intelligent-vision.org/

FEATURE EXTRACTION FROM PALMPRINT

Sagaf YOUSSOUF

youssouf.sagaf@etu.u-pec.fr

Presented on October 19, 2020

UPEC
UNIVERSITÉ PARIS-EST CRÉTEIL

FACULTÉ DES SCIENCES
ET TECHNOLOGIE

OUTLINE

1. Introduction

2. Methods and materials

    - Main components of the system
    - Algorithm
    - Hand segmentation
    - Feature extraction from the palmprint

3. Results

    - Signature vector definition
    - Matching of signatures

4. Conclusion

INTRODUCTION

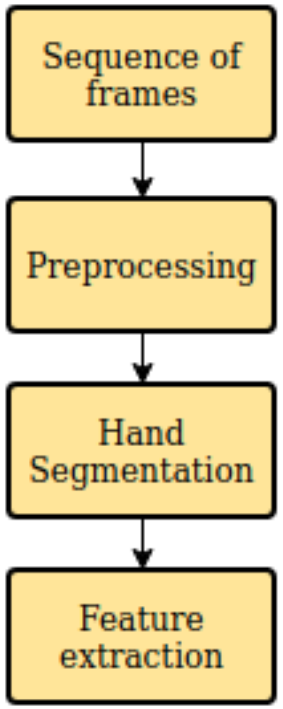
Why using palm print ?

- Palm print contains a number of unique features for reliable personal identification;
- High reliability and user acceptance;

Main objective :

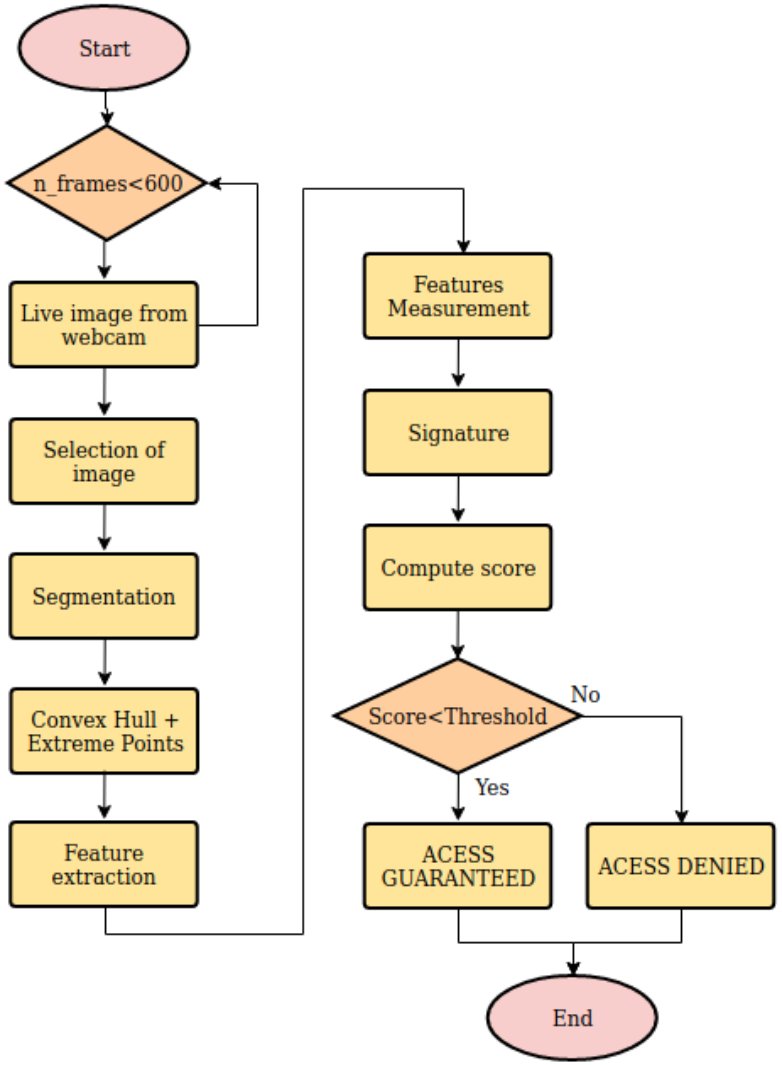
- Extract some features in order to achieve some measurement to characterize hand;

MAIN COMPONENTS OF THE SYSTEM



- Live capture stream launched for 600 frames and the last image is selected after calibration;
- Preprocessing methods are applied to the acquired image;
- Taking out the hand region by eliminating unwanted regions;
- Measurement of the extracted features;

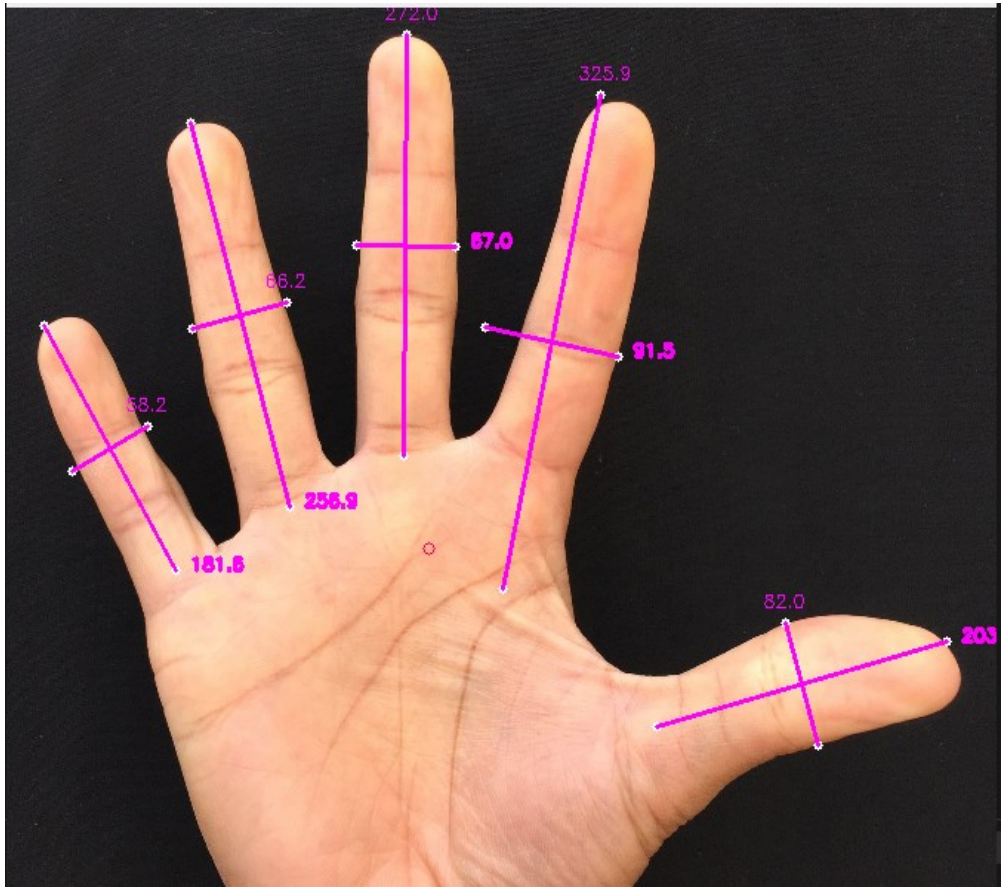
PALM PRINT FEATURE EXTRACTION ALGORITHM



HAND SEGMENTATION

- Threshold the image using **cv2.threshold()**, then perform a series of erosion operation;
- Dilation to remove any small regions of noise;
- Find contours in thresholded image using **cv2.findContours()**, then grab the largest;
- Grab the largest contour and get the max area which is the hand;

FEATURE EXTRACTION FROM THE PALMPRINT



- Get the palm defects using **cv2.convexHull()** OpenCV function;
- Get the finger roughly area and get the finger area;
- Compute the bounding box of the contour;
- Ordered bounding box and compute the midpoint between the corresponding coordinates;
- Compute the Euclidean distance between the midpoints in pixel;

RESULTS

- Signature vector is composed of the width and the length of each finger and the coordinate of the center mass;

```
[INFO] Signature vector = [82.01, 203.57, 58.23, 181.59, 66.22, 256.89, 325.86, 91.49, 272.01, 67.01, 285, 349]
[INFO] Score 0.048027258137587 35
[INFO] ACCESS DENIED
(dl4cv) yosagaf@xps:~/devs/handetection$
```

CONCLUSION

- Algorithm work with image and should be coupled with the real time video capture;
- This lab enable me to highlight my skills in terms of feature extraction

THANKS
FOR YOUR ATTENTION

Sagaf Youssouf
youssouf.sagaf@etu.u-pec.fr