Introduction to Pattern Recognition WS 2018/19
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Programming Task 4:
Palm Print Identification (50 Points)

Deadline: 20. January 2019

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1 Palm Print Recognition (50 P)

In this task, you are supposed to implement a palm print identification tool according to the paper of Li et al [1]. It mainly consists of three major steps:

1. The first step is the pre-processing step, which will be rewarded with a total of 24 Points for a correct solution (Chapter 2).

2. The second step is the feature extraction which is rewarded with 13 Points (Chapter 3).

3. The third step is the feature matching and identification of the palm print which is rewarded with another 13 Points (Chapter 4).

Three palmprint images are provided, but, of course, you are allowed to enlarge this database by your own palm prints. For making things a little easier, a code skeleton is provided consisting of four Python modules.

Important Hint: In Chapter 2 – Page 5/6 – it is mentioned to crop the image to an subimage with a fixed size. You are not supposed to do so! We can also work on the complete image! However, if you want to crop the image, you can, but this will not be graded.

- 'Main.py': Main module to call the submethods and visualize the results (**DO NOT MODIFY**).

- 'PalmprintAlignment.py': Module pre-processing the original image and returning it (**Implement Chapter 2**).

- 'FourierTransform.py': Module calculating the Fourier Transform of the pre-processed image. (**Implement Chapter 3**).

- 'DistanceMeasure.py': Module calculating the final energies (**Implement Chapter 4**).

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[1] Li, Wenxin, David Zhang, and Zhuoqun Xu. "Palmprint identification by Fourier transform." International Journal of Pattern Recognition and Artificial Intelligence 16.04 (2002): 417-432.

2 Output Example
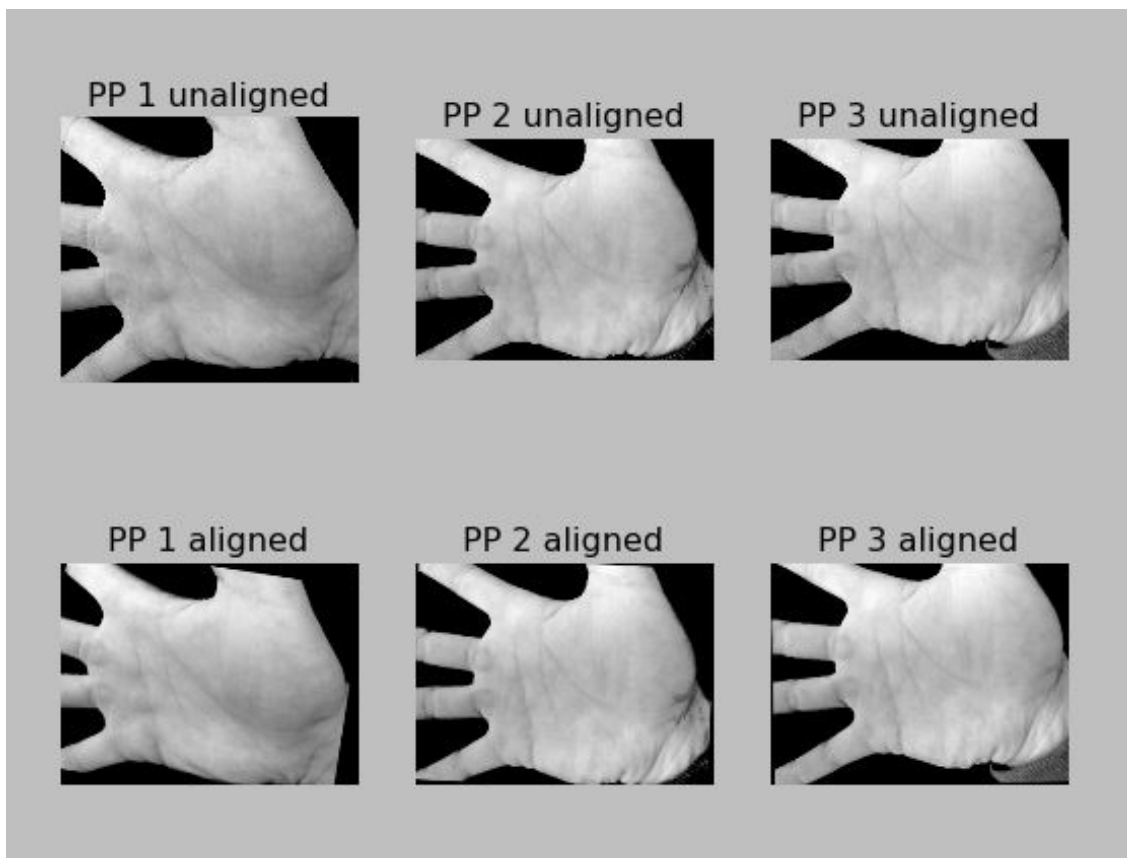

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DR: Ring-like area
DTheta: Fan-like area
The smaller the value, the better the match. d=0: completely identical
1-1
DR: 0.0
DTheta :0.0
2-1
DR: 34.4
DTheta :26.5
1-2
DR: 34.4
DTheta :26.5
1-3
DR: 33.9
DTheta :57.0
2-3
DR: 10.7
DTheta :12.3
```