Numerical Analysis Project (Persian Digits Recognition) Maryam Alipour | 9612037

This project use feature extractor and classification algorithm to detect 0-11 digit of <u>HODA Farsi</u> Digit Dataset.

Classification Algorithm

- KNN
- Bayes
- LinearSVC

Feature Extractor Algorithm

- SVD
- PCA

Install requirements

pip install opency-python, numpy, matplotlib, sklearn

Usage

You can specify the photo path of your example on line 191. Default example is "example_image.jpg" which is the number 3. Run <u>main.py</u> script. After executing the code you can select the decomposition and classification algorithm in the terminal.

```
🛞 Figure 1
                                                                                                                                         OCR(Optical character recognition) --
              Persian Digit Recognition
                                                                                              Error Rate K Value
                                                                 0.34
Please select number of classifier:
       Bayes
                     3.LinearSVC
                                                                 0.32
                                                                 0.30
                                                              0.28
0.26
0.24
Please select number of feature extractor:
          2.PCA
          Classifier: KNN
          Feature Extractor: SVD
                                                                 0.22
          Accuracy: 0.8095238095238095
Your Input Prediction: 3
                                                                                                                                 17.5
                                                                                                       10.0
                                                                                                                12.5
                                                                                                                         15.0
                                                             # (← | → | 4 Q = | B
```