Face Recognition for Mobile Phones
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Face Recognition Application
Face recognition for mobile phone security

Algorithm
Block Diagram

Fisherface algorithm

Experimental Results
MATLAB test

Droid Implementation

Face Detection

Training set

Test set

Pre-processing

Color to gray and Histogram equalization
Elliptical mask

Training Set

Output

Cell Image

Device
Motorola DROID, ARM A8 550MHz

Size of the Training Set
45 face images

Computation time
1.5 s

Face Detection

Algorithm

Face Recognition

Input Image

Color Segmentation

Template Matching

Training set

Processed training set

Average face

First 10 Eigenfaces

Template Matching

Output

Cropped face image

Av. face

Eigenface

Fisherface

Total correct rate

Eigenface

Fisherface

EER = Equal Error Rate.

where False Acceptance Rate = False Rejection Rate

The smaller EER, the better a recognition system works!

Face detection

Input Image

Color Segmentation

Template Matching

Training set

Pre-processing

Color to gray and Histogram equalization
Elliptical mask

Sirovich and Kirby method: avoid SVD of mn x mn matrix!

Fisher Linear Discriminant analysis in low-dimensional space

Training Image Set

Mobile Phone User

Training Image Set

Mobile Phone User

MATLAB test

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where False Acceptance Rate = False Rejection Rate

The smaller EER, the better a recognition system works!