



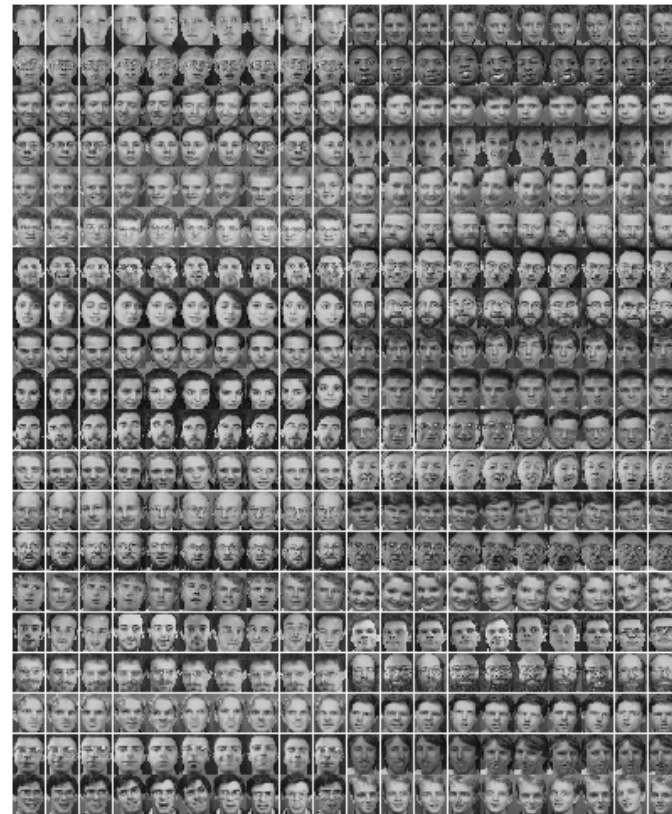
Face Recognition

Face recognition

- Face-image database
- Nearest classification

Database of facial images

data\face.bmp
forty person
four hundreds pictures



Read and display database

```
DB=imread('face.bmp');  
imshow(DB);
```

Get facial images

- Get the j th facial image of the i th person

```
i=1;j=2;
```

```
Face=getface(DB,i,j,0);
```

```
imshow(Face);
```

Uint8 to double

- Translation of an image to a matrix(double)

```
V = double(Face);  
imshow(uint8(V));
```

Reshape

- From an image to a row vector

```
[m,n]=size(Face);  
v=reshape(double(Face),1,m*n);
```

- From a row vector to an image

```
Face=reshape(uint8(v),m,n);  
imshow(Face);
```

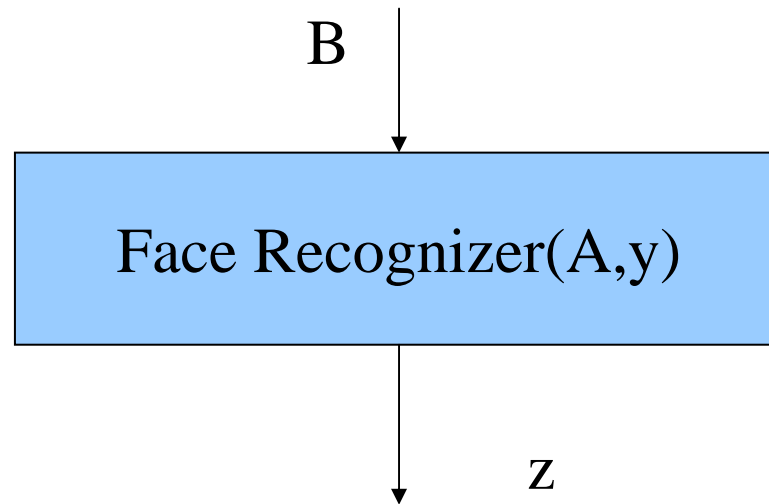
Paired Data for Training

- Paired data: A, y
 - A : each row in A represents a facial image
 - y : $y(i)$ stores the id number of the face represented by $A(i,:)$

Paired Data for Testing

- Testing data: B, z
 - B : each row in B represents a facial image
 - z : $z(i)$ stores the id number of the face represented by $B(i,:)$

Data flow



Nearest classification

- Let \mathbf{b} denote a row of matrix B
- \mathbf{a}_i denotes a row of matrix A
- Distance measure
 - Euclidean distance
 - Nearest training image $j = \min_i \|\mathbf{a}_i - \mathbf{b}\|$
 - The face represented by vector \mathbf{b} is named as $y(j)$

Face recognition

Nearest_C.m

demo.m