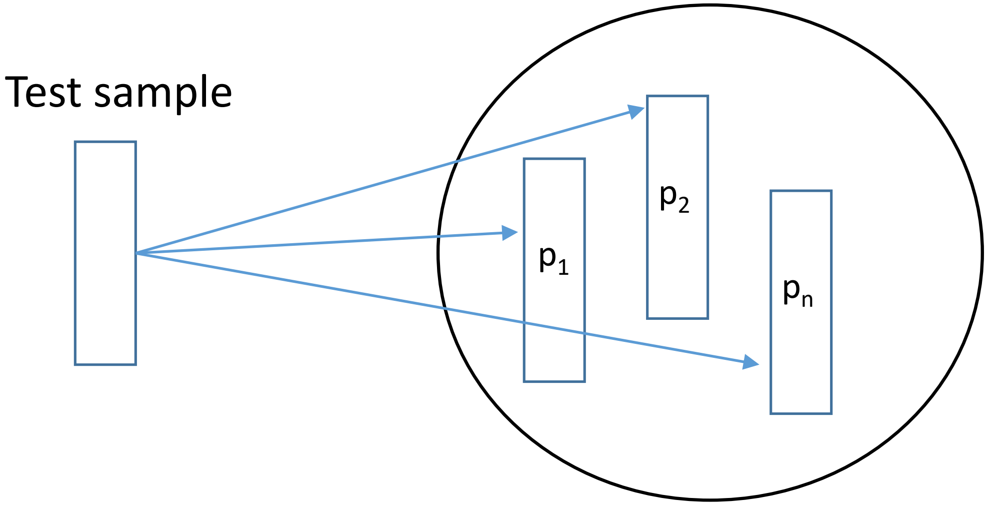
Machine Learning

Assignment #1

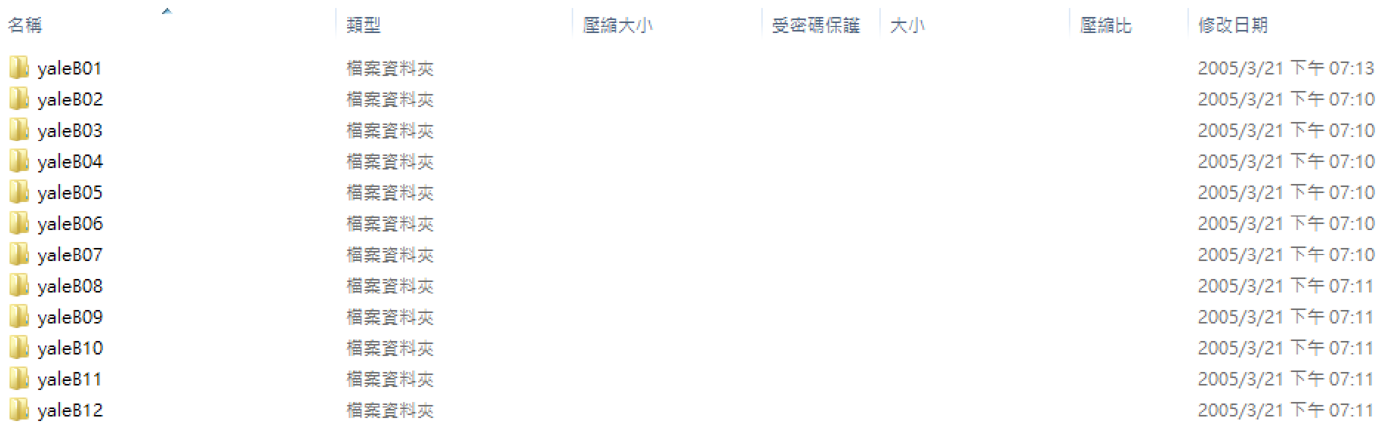
Nearest Neighbor Search

- For one test sample, find the nearest sample in the training set.
- The nearest neighbor can be found using
  - SAD – sum of absolute distance
  - SSD – sum of square distance
- Assign the label of the NN to the test sample



Face Recognition

- The Extended Yale Face Database



名稱	類型	壓縮大小	受密碼保護	大小	壓縮比	修改日期
yaleB01	檔案資料夾					2005/3/21 下午 07:13
yaleB02	檔案資料夾					2005/3/21 下午 07:10
yaleB03	檔案資料夾					2005/3/21 下午 07:10
yaleB04	檔案資料夾					2005/3/21 下午 07:10
yaleB05	檔案資料夾					2005/3/21 下午 07:10
yaleB06	檔案資料夾					2005/3/21 下午 07:10
yaleB07	檔案資料夾					2005/3/21 下午 07:10
yaleB08	檔案資料夾					2005/3/21 下午 07:11
yaleB09	檔案資料夾					2005/3/21 下午 07:11
yaleB10	檔案資料夾					2005/3/21 下午 07:11
yaleB11	檔案資料夾					2005/3/21 下午 07:11
yaleB12	檔案資料夾					2005/3/21 下午 07:11

- All the images can be downloaded at:
  - Cropped Images (39 persons, 65 images each person)
    - http://vision.ucsd.edu/extyaleb/CroppedYaleBZip/CroppedYale.zip

Steps of Assignment #1

1. Read all images and converted to gray-scale images.
2. Split the images into training set / test set
   - First 35 images as training, the rest 30 images as testing
3. Prepare the ‘**Label**’ for training and testing images
4. Find Nearest Neighbor for each **test image**
5. Calculate the accuracy for NN method.
   - Accuracy = #Correct NN Results/ #Total Test Images

Requirement for Assignment #1

1. Setup the programming environment of Python
2. Use Python to implement NN for face recognition
3. Submit **two text files** and your **code** to E-Course
   - Readme – How to run your code
   - Report
     - Method description
     - Experimental results - accuracy
     - Discussion of difficulty or problem encountered
4. Deadline: 04/11(Wed) 11:59p.m