

Specifications of the Face Recognizer System for ML Term Project

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May 16, 2018

1. Goals

This project aims to set up the practical experiences to build a machine learning system for students. The students are expected to exercise their skills in computer programming, system design and implementation, theoretical basis of ML technologies, and team-based collaboration. Every skill in these aspects is very critical to the career development of computer engineers and computer scientists. Through the problem solving and the successful accomplishment in this project, a student can show everyone, without any doubt, that you have been ready for the challenges of your future professional exploration in the fields of computer science and engineering.

2. System Functions

The functionalities and documentation of the recognizer and their weights for the grade evaluation are listed below:

- (1) Data Input (15%): the system must acquire the face images using the following ways
 - (a) Disk file loading (**required**): reading a testing image from a file (in jpg format) in disk drives. You can design this functionality with a graphical user interface (GUI) or a command line interface (CLI);
 - (b) Web camera shooting (optional): take a picture from the web camera.
- (2) Data Training (15%): specifying a directory which contains all the training image files of the 50-person face database and read all images to train your recognizer. You can design this functionality with a GUI or a CLI. After training, the system needs to respond with a message acknowledging the trained model you use to train the recognizer and the time taken by the training process.
- (3) Data Testing (30%): when testing your recognizer, you will be required to input an untrained face image provided by the teacher through the input method specified previously. Then, your recognizer must recognize this face image and list the top-5 candidate persons among the 50 target persons either in textual outputs or graphical outputs. Five tests will be conducted to evaluate the overall recognition rate of your recognizer.
- (4) System Documentation (25%): a detailed documentation must be prepared

to give the descriptions about your recognizer. The descriptions must include:

- (a) the ML technology you used in the recognizer;
 - (b) the modules enclosed in your recognizer and their functions;
 - (c) how you test your recognizer to evaluate its recognition rate;
 - (d) the problems suffered in your development;
 - (e) the task allocation of each member and how you integrate the task outputs from all members;
 - (f) any bonus features or functionalities included in your recognizer;
 - (g) how you feel about doing this project.
- (5) Version Control (15%): a complete version control log must be kept with your project on the GitHub. From the log, the teacher can verify that all programs are really written by different members of your team. If no log is provided, no credit will be given to this evaluation item for your project.

3. Acceptance Check

- (1) Date for checking: 2018 June 25 ~ 2018 July 8.
Note: Please make the reservation at least one day prior to the check date through email to ccchiang@gms.ndhu.edu.tw. Cancellation must be done at least 12 hours prior to the check time.
- (2) Time Slots for checking:
- (a) 9:00 ~11:50 Monday~Thursday
 - (b) 14:00~16:30 Monday, Tuesday, Wednesday
- Note: Don't be late.
- (3) Place: Room A323 (Multimedia Interaction Technology Lab.)
- (4) Limitation on Rounds of Checking:
- (a) To allow the improvement on your project for attaining a higher grade, each team can conduct at most two rounds of acceptance check on different dates.
- (5) All project members must show up when checking.