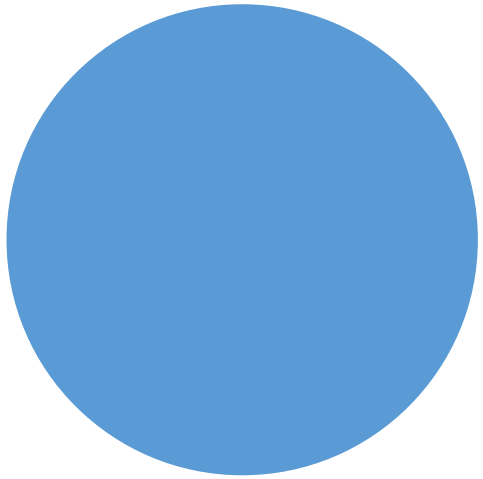
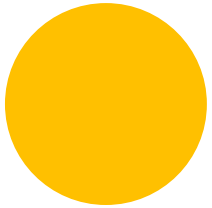



Project Codebase Introduction

COMP3278B 2020

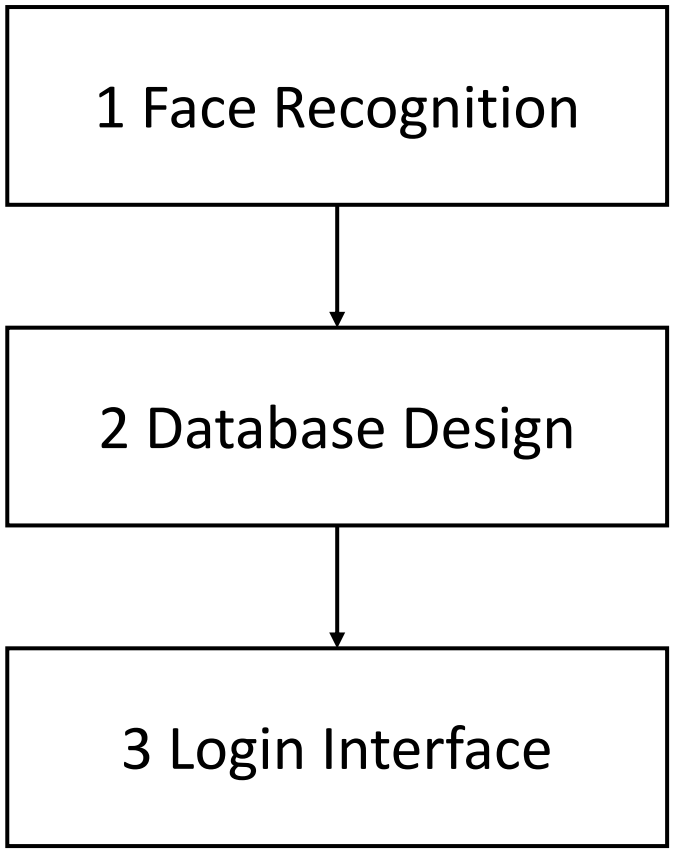
Overview

Course Project

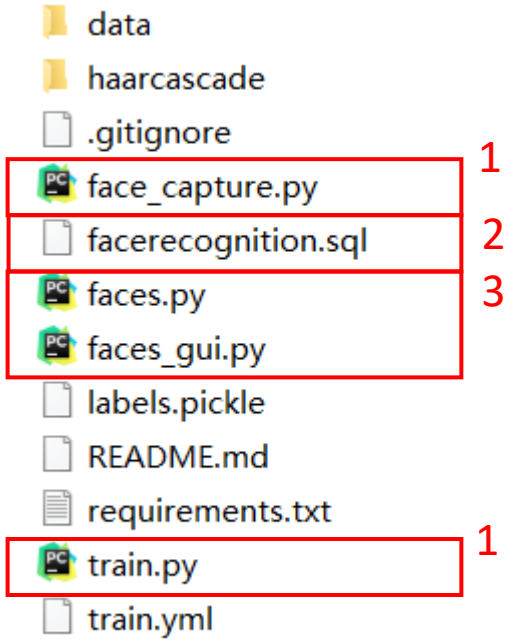
Project Descriptions. You are invited to develop a **facial login component** of an Intelligent Course Management System (ICMS). The face login component may have the following functions.

- When a student login with his/her face, his/her information such as name, login time, and welcome message will be presented in the graphics user interface (GUI).
- If the student has class within one hour, the corresponding course information, classroom address, teacher's message, links of Zoom, tutorial/lecture notes, other course materials and so on and so forth will be presented in the GUI. The student could click the links to redirect to Zoom or other materials. The GUI should also allow the student to send the above information to his/her email address by email.
- If the student does not have class at the moment, the GUI could present a personal class timetable for the student.
- The system should record the latest behaviour of the student, such as when he/she logins the system, how long the student stays in the system, etc.

Overview



Folder Structure



Usage

- Create a virtual environment using Anaconda

```
conda create -n face python=3.7
conda activate face
pip install -r requirements.txt
```

- Install MySQL in local machine
  - Mac https://dev.mysql.com/doc/mysql-osx-excerpt/5.7/en/osx-installation-pkg.html
  - Linux https://dev.mysql.com/doc/mysql-linuxunix-excerpt/5.7/en/linux-installation.html
  - Windows https://dev.mysql.com/downloads/installer/

  You'll obtain an account and password after installation.

1 Face Recognition

- Collect face data using camera face_capture.py
  - The images will be saved in `data/Jack` folder.
  - **Note:** Only one person's images can be captured a time.

```
"""
user_name = "Jack"    # the name
NUM_IMGS = 400        # the number of saved images
"""
python face_capture.py
```

- Train a face recognition model train.py
  - `train.yml` and `labels.pickle` will be created at the current folder.

```
python train.py
```

2 Database Design

- Design database facerecognition.sql
  - We provide a sample code for TABLE `Student`.
  - Your database should have at least five tables. How to design the tables is your design choice.

```
CREATE TABLE `Student` (
  `student_id` int NOT NULL,
  `name` varchar(50) NOT NULL,
  `login_time` time NOT NULL,
  `login_date` date NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO `Student` VALUES (1, "JACK", NOW(), '2021-01-20');
```

2 Database Design

- Import database

```
# login the mysql command
mysql -u root -p

# create database.
#'mysql>' indicates we are now in the mysql command line
mysql> CREATE DATABASE facerecognition;
mysql> USE facerecognition;

# import from sql file
mysql> source facerecognition.sql
```

```
mysql> SELECT * FROM student;
+------------+------+------------+------------+
| student_id | name | login_time | login_date |
+------------+------+------------+------------+
|          1 | JACK | 08:49:56   | 2021-01-20 |
+------------+------+------------+------------+
1 row in set (0.00 sec)
```

3 Login Interface

- OpenCV Interface faces.py
  - The camera will be activated and recognize the faces using pretrained model.
  - You need to implement more useful functions for the interface.

```
python faces.py
```

```
If the face is recognized
    if not find the student information in the database
        output "NOT FOUND"
    else
        update the login_time and login_date in database
        # implement other useful functions here
else
    output "UNKNOWN"
```

```
mysql> SELECT * FROM student;
+------------+------+------------+------------+
| student_id | name | login_time | login_date |
+------------+------+------------+------------+
|          1 | JACK | 16:54:25   | 2021-01-22 |
+------------+------+------------+------------+
1 row in set (0.00 sec)
```

OpenCV GUI tutorial: https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_gui/py_table_of_contents_gui/py_table_of_contents_gui.html

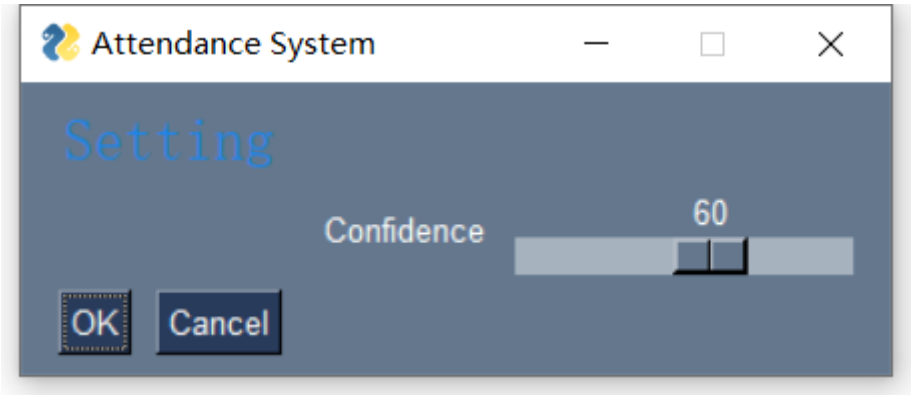
3 Login Interface

- PySimpleGUI Interface

faces_gui.py

  - PySimleGUI is a simple and effective python package for interface.

```
python faces_gui.py
```



PySimleGUI tutorial: https://pypi.org/project/PySimpleGUI/