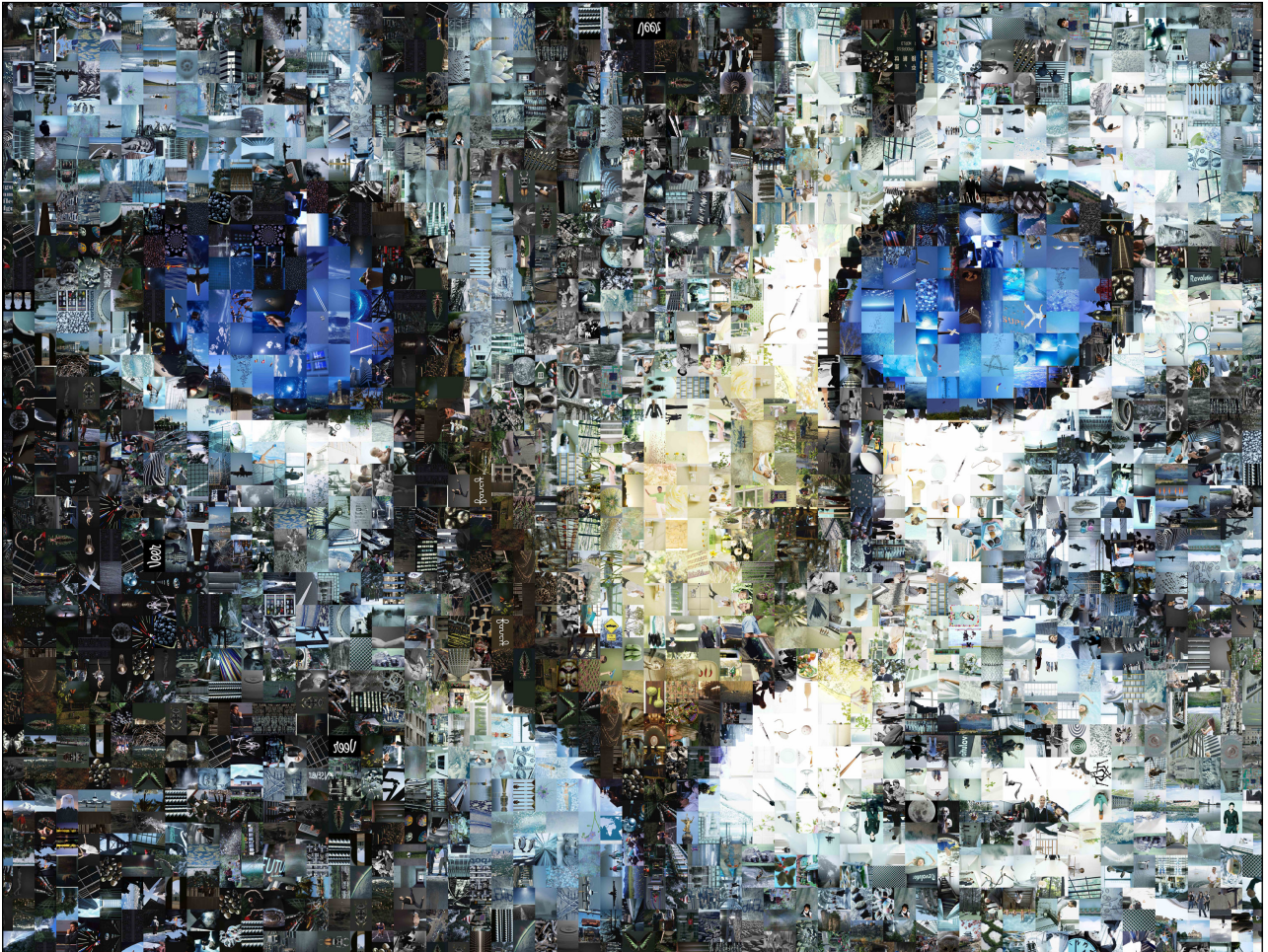# Photo Mosaic

Make a profile picture for your best friend.

0710006 盧可瑜 - 2018年12月24日

Overview & Motivation

What birthday gift will you sent to your best friend? A birthday card? A handmade cake? Next time, you may want to make something different and more interesting.

What I want to do is to make a photomosaic profile picture to sent to my best friend. For this reason, I'd like to make a project, a python program can generate my best friend's photomosaic profile picture. At first, it will ask the information of user's Facebook. Then it will analyze who is your best friend by Facebook activities, for example, who clicks like most frequently, who often tags you, and so on. Then, it will output his profile picture. What's more interesting, this picture would be made by "photomosaic". "Photomosaic" means that a picture is composed of a lot of small pictures, in fact, the picture would be divided into several small sections, and each of them would be replaced by the similar-color photo. When viewed at low magnifications, the individual pixels appears as the primary image.

I think this would be a fashionable project, and the users will have a lot of fun.

Plan

- **My code would be composed of the functions below.**
  - Input (Dec 25 ~ Dec 28)
    - Ask user to input his Facebook access token.
    - Ask user to input some keywords.(What kind of photos will you use later?)
  - FBBestFriend (Dec 29 ~ Dec 30)
    - Use Facebook API to count the number of each friend's like of his posts.
    - Use Facebook API to count how many times did his friends tag him.
    - Find out who is his best friend, and then return his best friend's id.
  - ProfilePicture (Dec 31)
    - Use the id to get his best friend's profile picture.
  - PhotoDataset (Jan 1 ~ Jan 4)
    - Use the keywords inputted by user to search images.
    - Choose 500 most related images for each keyword.
    - Use BeautifulSoup to get the html, then download all these images.
    - Crop the images into the same size squares.
  - DividePicture (Jan 5)
    - Use OpenCV to divide the profile picture into pixels of the same sizes.
  - AverageRGB (Jan 5)
    - Average the RGB color value of each pixel and photo.
  - ClassifyData (Jan 6)
    - Classify the photos by their RGB values.
  - MatchPixel (Jan 6)
    - Search a photo with the most similar average RGB value of each pixel.
  - CombinePhoto (Jan 10)
    - Use OpenCV to combine the new profile picture with photos.
    - Delete data set by function in sys.
  - Output (Jan 10)
    - Use OpenCV to show the new profile picture through a window.
- **Test & Demo** (Jan 11 ~ Jan 14)
  - Ask some of my classmates to help me test my project. Then, demo it to TA.
- **The Web Data or Services I will use for this project.**
  - Facebook Graph API
    - Use this API to get user's social graph.
    - Get user's friend list, numbers of like of the post, and tags……
  - OpenCV (Open Source Computer Vision Library)
    - Use this API to deal with the images. Read, Resize, Crop, Combine, Show…

Timeline

Date	12/22 Sat	12/23 Sun	12/24 Mon	12/25 Tue	12/26 Wen	12/27 Thu	12/28 Fri	12/29 Sat	12/30 Sun	12/31 Mon	01/01 Tue	01/02 Wen	01/03 Thu	01/04 Fri	01/05 Sat	01/06 Sun	01/07 Mon	01/08 Tue	01/09 Wen	01/10 Thu	01/11 Fri	01/12 Sat	01/13 Sun	01/14 Mon	01/15 Tue	01/16 Wen	01/17 Thu
Deadline			Proposal														Report			Demo							Final
Doc-Proposal	■	■	■																								
Doc-'Update1'															■	■	■										
Doc-'Update2'+'Run'																							■	■	■	■	■
Code-Input				■	■	■	■																				
Code-FBBestFriend								■	■																		
Code-ProfilePicture										■																	
Code-PhotoDataset											■	■	■	■													
Code-DividePicture															■												
Code-AverageRGB															■												
Code-ClassifyData																■											
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Code-CombinePhoto																				■							
Code-Output																				■							
Test & Demo																					■	■	■	■	■		