Scouter: Face recognition contribution detector

David Chang
Back-End Developer, Kuberentes admin, DevOps

Scouter: 3 reasons why

Garbage Talks at Linkernetworks

Drangon Ball!

For COSCUP!

Let's Live Demo!

Outline

Data mining

Face detection & recognition

Feature & Architecture

- Face + Contributino ----> Github api + go-github (Golang)
- Face Recognitiion ----> Face detection api (Python)
- API server + Database ----> Flask + PyMongodb (Python)
- Webcam + AR + Face detection ----> Unity + face tracker (C#)

Face and User Data Mining

1. Download user data and avatar

2. Fetch contribution statics

Github API
go-github (Api library in Golang)

4 Data Miners (Golang)

1. User fetcher -- fetch user data with search API
2. User detail fetcher -- fetch user detail with user API
3. Avatar downloader -- fetch user's avatar by user data
4. Contribution fetcher -- parse github contribution HTML

Notes about Github API

1. API paging limit
   Search API only return first 1000 users

2. API request limit
   Search API 30 query / min
   User API 50000 query / hour

3. Parallel request with Wait Group (Optional)

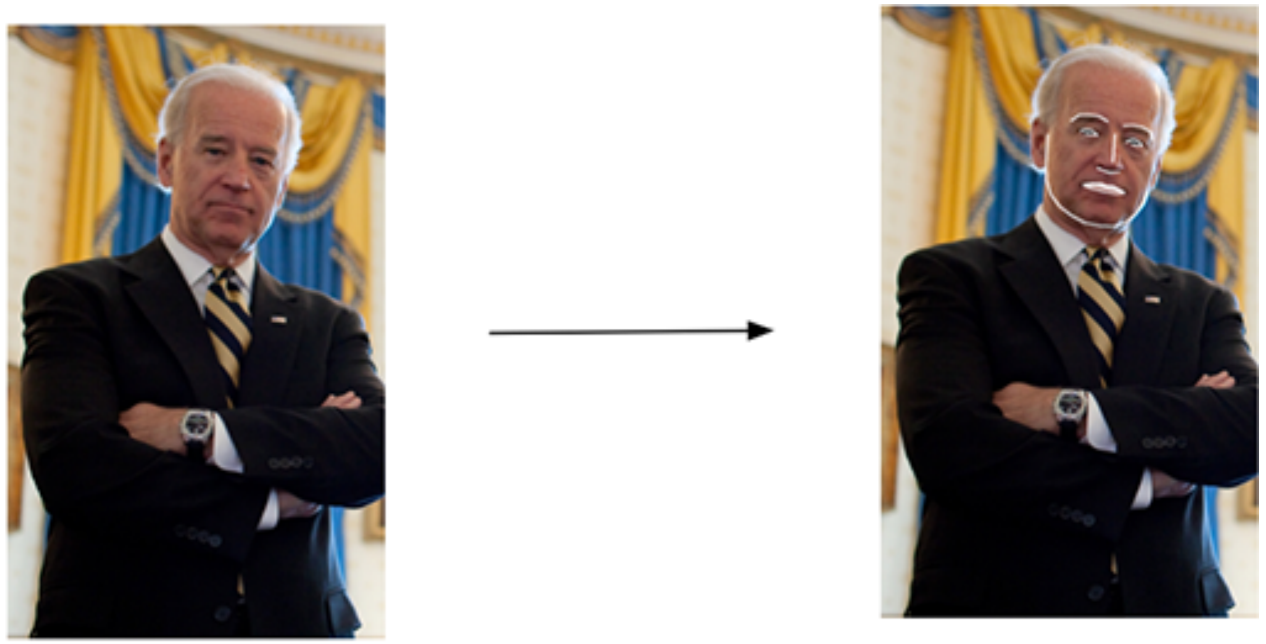
https://api.github.com/search/users?q=location:taiwan+created:2008-01-01..2008-02-01&sort=joined&order=asc

Face detection & Face recognition

The world's simplest facial recognition api

Data pre-processing -> Face encoding -> Face recognition

It's really easy!



Face detection & Face recognition

1. Detect face from avatars
2. Detect identities face image
3. Store identities and userID in a 'big' matrix
4. Detect face from a unknown image
5. Compare unknown face with matrix
   find the distances between all face identities

Api server

1. Consume face image from App

2. Detect face from image and recogniize user by face identity

3. Get user data from DB and return to App

Flask
web development,
one drop at a time

App Workflow

Camera	APP	API server	Face recognition	DB	API server	App
Video Stream	Face Image		Identify User	User Data		Show data

App and AR unity

Unity : build app and AR UI

OpenCV : image processing library

dlib : face recognition tools, models and algorithms

Unity App

1. Control camera
2. Detect face on App-side with face tracker
3. Cut and Send face to API server and get user data back
4. Display user data to view

Issues

1. Github data source
   Nobody use their won face! 3000 human faces / 14000 avatars
   Github avatar has very low resolution

2. Face recognition API tuning required

3. I'm a Unity and C# newbie ;)

> 『不是不準，只是正確機率不夠高。』
>
> — *XD*

Review

Golang crawler & html parser	Golang
Github API	
Python Flask	
Face Recognition API	
Unity	
OpenCvForUnity	
dlib shape predictor	
C#	

How

我想分享的是一個越級打怪，一邊快速成長的捷徑:

挑幾個不會的題目，然後去報 COSCUP 講一個 session

The end

COSCUP 充滿了愛與勇氣的故事

我們不是在寫客戶要的，公司要的，主管要的。工作上也有很多有趣的事情。
我們在做自己想做的東西。

最後送大家一句話。

『因為我自己想做，還有當初推坑我的人太厲害。』

– David Chang, 2018 COSCUP

The end

投影片及講稿 https://github.com/chechiachang/my-speeches/tree/master/fr-ar-open-source-power-detector

開源原始碼 https://github.com/chechiachang/scouter

Deckset: md to presetation