

Final Presentation

Team 2

June 21, 2019

1 Producing presentation slides using the LaTeX

2 Content includes the following

■ Introduction

- Introduction to your team
- Introduction to the problem you're trying to solve

■ Methodology

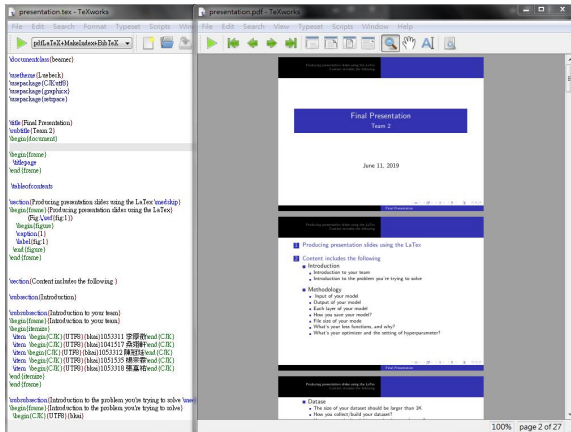
- Input of your model
- Output of your model
- Each layer of your model
- How you save your model?
- File size of your model
- What's your loss functions, and why?

- Dataset
 - The size of your dataset should be larger than 1K
 - How you collect/build your dataset?
 - How many paired training samples in your dataset?
 - How many paired validating samples in your dataset?
 - How many paired testing samples in your dataset?
- Experimental Evaluation
 - Experimental environment (CPU, GPU, memory, . . . , etc.)
 - How many epochs you set for training?
 - Qualitative evaluation
 - Quantitative evaluation
- Live demo of your work

Producing presentation slides using the LaTeX
Content includes the following

Producing presentation slides using the LaTeX

(Fig. 1)



Producing presentation slides using the LaTeX
Content includes the following

Introduction
Methodology
Dataset
Experimental Evaluation
Live demo of your work

Introduction

Introduction

Our team members

- 1053311 李厚徵
- 1041517 桑翊軒
- 1053312 陳冠廷
- 1051535 楊宗霖
- 1053318 張嘉祐

The problem we're trying to solve

期末專題主要是想解決我們對大自然的好奇心，當我們在校園探索當中，有很多花我們不知道其名稱，透過這門課所學的知識，利用影像辨識的方法，將各種花朵辨識出來。

Methodology

Methodology

Model

input of our model (Fig. 2)

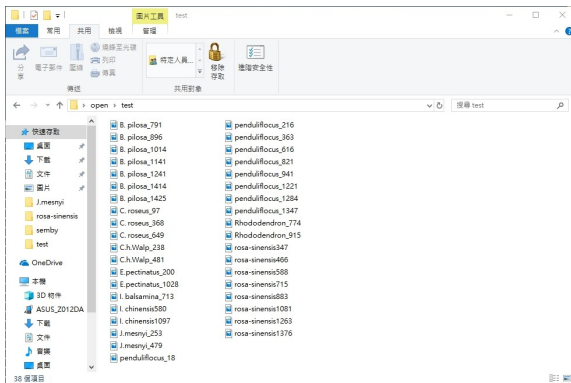


Figure: 2

Model(cont.)

output of our model , prediction result(包含: 預測的label, 其信心度)(Fig. 3)

```
>>> test/I.chinensis160.jpg
test/I.chinensis160.jpg i chinensis 0.9980248
>>> test/I.chinensis4.jpg
test/I.chinensis4.jpg i chinensis 0.9948152
>>> test/I.chinensis580.jpg
test/I.chinensis580.jpg i chinensis 0.9995357
>>> test/I.chinensis806.jpg
test/I.chinensis806.jpg i chinensis 0.9998437
>>> test/J.mesnyi_1028.jpg
test/J.mesnyi_1028.jpg j mesnyi 0.9997085
>>> test/J.mesnyi_253.jpg
test/J.mesnyi_253.jpg j mesnyi 0.9999585
>>> test/J.mesnyi_479.jpg
test/J.mesnyi_479.jpg j mesnyi 0.99997115
>>> test/J.mesnyi_634.jpg
test/J.mesnyi_634.jpg j mesnyi 0.9999558
>>> test/J.mesnyi_768.jpg
test/J.mesnyi_768.jpg j mesnyi 0.9999
>>> test/penduliflocus_1221.jpg
test/penduliflocus_1221.jpg penduliflocus 0.9997986
>>> test/penduliflocus_216.jpg
test/penduliflocus_216.jpg penduliflocus 0.9946497
>>> test/penduliflocus_363.jpg
test/penduliflocus_363.jpg penduliflocus 0.9999683
>>> test/penduliflocus_616.jpg
test/penduliflocus_616.jpg penduliflocus 0.99387544
>>> test/penduliflocus_821.jpg
test/penduliflocus_821.jpg penduliflocus 0.9999893
```

Model(cont.)

(Fig. 4)

```
>>> test/Rhododendron_110.jpg
test/Rhododendron_110.jpg rhododendron 0.9997427
>>> test/Rhododendron_277.jpg
test/Rhododendron_277.jpg rhododendron 0.9990305
>>> test/Rhododendron_531.jpg
test/Rhododendron_531.jpg rhododendron 0.99960035
>>> test/Rhododendron_774.jpg
test/Rhododendron_774.jpg rhododendron 0.9990835
>>> test/Rhododendron_915.jpg
test/Rhododendron_915.jpg rhododendron 0.99908745
>>> test/rosa-sinensis118.jpg
test/rosa-sinensis118.jpg rosa sinensis 0.9999633
>>> test/rosa-sinensis378.jpg
test/rosa-sinensis378.jpg rosa sinensis 0.99791247
>>> test/rosa-sinensis506.jpg
test/rosa-sinensis506.jpg rosa sinensis 0.9999703
>>> test/rosa-sinensis695.jpg
test/rosa-sinensis695.jpg rosa sinensis 0.9995598
>>> test/rosa-sinensis954.jpg
test/rosa-sinensis954.jpg rosa sinensis 0.98469156
```

Model(cont.)

我們的model層級分成: Expansion layer, convolution layer, projection layer... (Fig. 5)

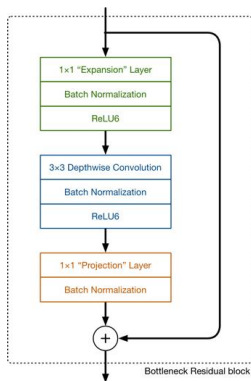
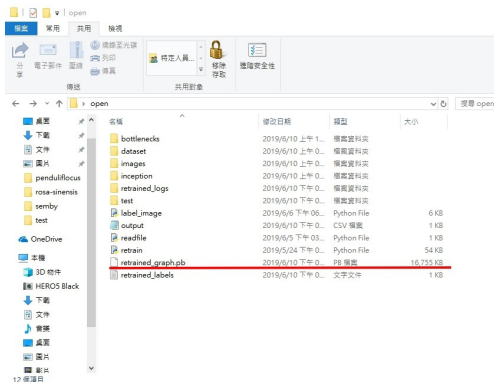


Figure: 5

Model(cont.)

We save as filename.pb(pb檔)

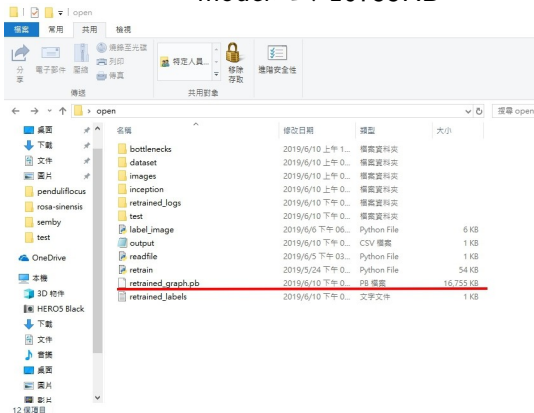


(Fig. 6)

Figure: 6

Model(cont.)

model大小16755KB



(Fig. 7)

Loss function

Cross-entropy:

在分類的狀況下，通常希望錯誤率越小越好，所以用錯誤率當損失函數是一個選項，但實際上我們並不會直接拿分類錯誤率當作損失函數進行最佳化，用錯誤率得到只知道此筆資料判別錯誤，但模型不會知道現在的模型錯的很多還是很少，這樣模型在學習時根本不知道最佳的模型在那的方向，也不知道要更新多少。

Cross-entropy 是所有類別的entropy的總和，簡單來說，就是各類別的訊息量的平均量(entropy)的總和。entropy也可以解釋成資料的不確定性，所以越低代表資料越穩定也就是說model越好。

Dataset

Dataset

Dataset

The size of our dataset 大小4.85GB 共有11098個檔案 (Fig. 8)

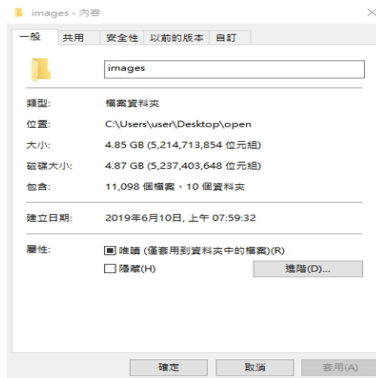
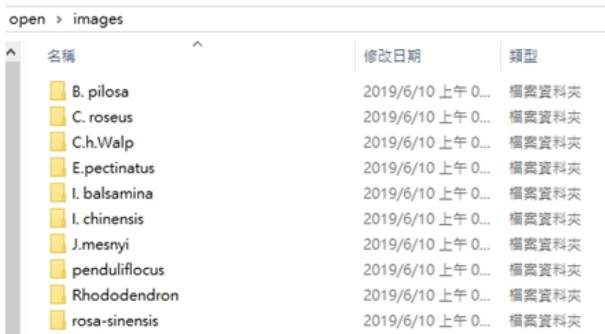


Figure: 8

Dataset(cont.)

dataset 檔案 (Fig. 9)



The screenshot shows a file explorer window with the path 'open > images'. The table below represents the contents of the 'images' directory.

名稱	修改日期	類型
B. pilosa	2019/6/10 上午 0...	檔案資料夾
C. roseus	2019/6/10 上午 0...	檔案資料夾
C.h.Walp	2019/6/10 上午 0...	檔案資料夾
E.pectinatus	2019/6/10 上午 0...	檔案資料夾
I. balsamina	2019/6/10 上午 0...	檔案資料夾
I. chinensis	2019/6/10 上午 0...	檔案資料夾
J.mesnyi	2019/6/10 上午 0...	檔案資料夾
penduliflocus	2019/6/10 上午 0...	檔案資料夾
Rhododendron	2019/6/10 上午 0...	檔案資料夾
rosa-sinensis	2019/6/10 上午 0...	檔案資料夾

Figure: 9

Dataset(cont.)

dataset的收集方法我們是對花做360度的影片拍攝，再將影片以frame切割得到圖片。

training、validating以及testing的配對樣本數比例是：
 $\text{training:validating:testing} = 8:1:1$

Experimental Evaluation

Experimental Evaluation

Experimental Evaluation

我們是在CPU的環境下進行實作及試驗

設定4000 epochs 來進行訓練

Qualitative

共10種花，對每種花各做五次測試的結果 共50個測資皆正確。(Fig. 10)

預測花種\實際花種	朱槿	杜鵑花	金鈴花	長春花	垂鈴花	鬼針草	黃金菊	萼距花	鳳仙花	龍船花
朱槿	5	0	0	0	0	0	0	0	0	0
杜鵑花	0	5	0	0	0	0	0	0	0	0
金鈴花	0	0	5	0	0	0	0	0	0	0
長春花	0	0	0	5	0	0	0	0	0	0
垂鈴花	0	0	0	0	5	0	0	0	0	0
鬼針草	0	0	0	0	0	5	0	0	0	0
黃金菊	0	0	0	0	0	0	5	0	0	0
萼距花	0	0	0	0	0	0	0	5	0	0
鳳仙花	0	0	0	0	0	0	0	0	5	0
龍船花	0	0	0	0	0	0	0	0	0	5

Quantitative

(Fig. 11) 以下是實作的結果值

```
Train accuracy = 100.0%  
Cross entropy = 0.000962  
Validation accuracy = 100.0% (N=100)
```

Figure: 14

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組員貢獻:

latex製作:

陳冠廷、楊宗霖負責Presentation

d張嘉祐負責SRS文件

Code實作:李厚徵

蒐集資料及建立Github project:桑翊軒

End