

# iWildCam 2019 - FGVC6

Categorize animals in the wild

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開放平台軟體期末專題, 2019

# Outline

- 1 Introduction
- 2 Methodology
- 3 Dataset
- 4 Experimental Evaluation

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# Introduction

## 成員介紹

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- 1041562 吳宗晉
- 1043310 施紹唐

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# Introduction

## 專題問題描述

- 我們挑選的主題是Categorize animals in the wild，一個在kaggle上面舉辦的比賽，利用kaggle提供的資料集來訓練出一個模型，讓我們可以藉由這個模型來為輸入影像分類，模型可以區分22種動物，希望可以藉由訓練出模型來監測觀察不同地區生物生態以及遷移情況，讓研究人員可以更輕易的掌握生態變遷。

# Outline

1 Introduction

2 Methodology

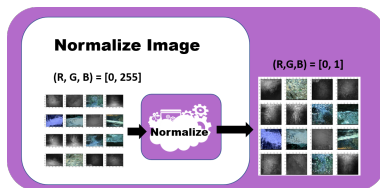
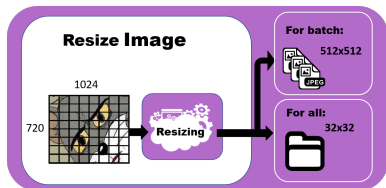
3 Dataset

4 Experimental Evaluation

# Methodology

## Input of model

- 一個(32,32,3)圖片

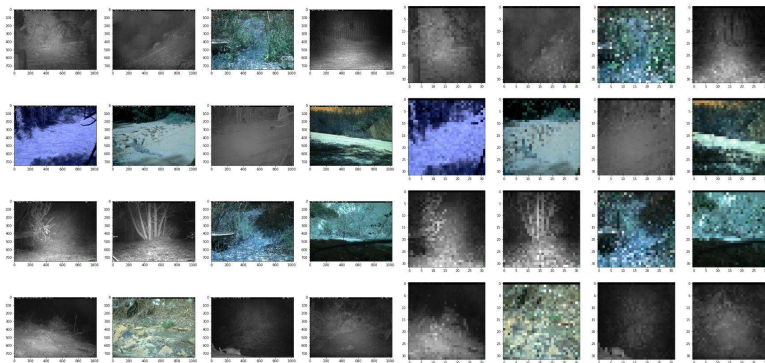




# Methodology

## Input of model

- 一個(32,32,3)圖片



# Outline

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2 Methodology

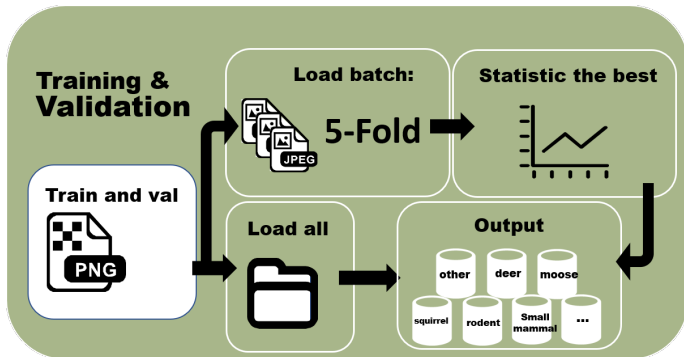
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# Methodology

## Output of model

- 輸出一個權重檔案，model.h5



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# Methodology

## Layers of model

- Dense121

GlobalAveragePooling2D(池化層)

激活函數(將輸出轉為機率)

```
-----  
Layer (type)                Output Shape                Param #  
-----  
densenet121 (Model)         (None, 1, 1, 1024)         7037504  
-----  
global_average_pooling2d_1 ( (None, 1024)         0  
-----  
dense_1 (Dense)             (None, 14)                 14350  
-----  
Total params: 7,051,854  
Trainable params: 6,968,206  
Non-trainable params: 83,648  
-----
```

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- 使用ModelCheckpoint函式儲存框架以及權重

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# Methodology

## File size of model

```
-----  
Layer (type)                Output Shape                Param #  
-----  
densenet121 (Model)         (None, 1, 1, 1024)         7037504  
-----  
global_average_pooling2d_1 ( (None, 1024)         0  
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```

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- 使用categorical crossentropy loss function  
因為我們在最後一層使用softmax激活函數計算機率，通常會搭配categorical crossentropy loss function 使用

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# Methodology

## Optimizer and hyperparameter

- Optimizer使用adam  
沒有使用hyperparameter

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### ● kaggle 競賽提供的資料集43G

Data (43 GB)

API kaggle competitions download -c iwildcam-2019-fgvc6 ? Download All

Data Sources	About this file	Columns
<ul style="list-style-type: none"><li>sample_submission.csv 154k x 2</li><li>test.csv 154k x 10</li><li>train.csv 196k x 11</li><li>test_images.zip<ul style="list-style-type: none"><li>0081cb4f-2c16-11e9-bcad-06f1...</li><li>0116a797-2c0c-11e9-bcad-06f1...</li><li>01518e45-2c05-11e9-bcad-06f1...</li><li>01b5caa4-2c16-11e9-bcad-06f1...</li><li>01e9db66-2c03-11e9-bcad-06f1...</li><li>01f6fa10-2bfb-11e9-bcad-06f10...</li><li>01f951f6-2c0f-11e9-bcad-06f10...</li><li>023a40ec-2c0c-11e9-bcad-06f1...</li><li>023a40fd-2c0c-11e9-bcad-06f1...</li><li>02977df1-2c15-11e9-bcad-06f1...</li><li>1000+ more</li></ul></li><li>train_images.zip</li></ul>	No description yet	<ul style="list-style-type: none"><li>Id</li><li>Predicted</li></ul>

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- kaggle 競賽提供

Data (43 GB)

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Data Sources	About this file	Columns
sample_submission.csv 154k x 2	No description yet	Id
test.csv 154k x 10		Predicted
train.csv 196k x 11		
test_images.zip		
0081cb4f-2c16-11e9-bcad-06f1...		
0116a797-2c0c-11e9-bcad-06f1...		
01518e45-2c05-11e9-bcad-06f1...		
01b5caa4-2c16-11e9-bcad-06f1...		
01e9db66-2c03-11e9-bcad-06f1...		
01f6fa10-2bfb-11e9-bcad-06f10...		
01f951f6-2c0f-11e9-bcad-06f10...		
023a40ec-2c0c-11e9-bcad-06f1...		
023a40fd-2c0c-11e9-bcad-06f1...		
02977df1-2c15-11e9-bcad-06f1...		
1000+ more		
train_images.zip		

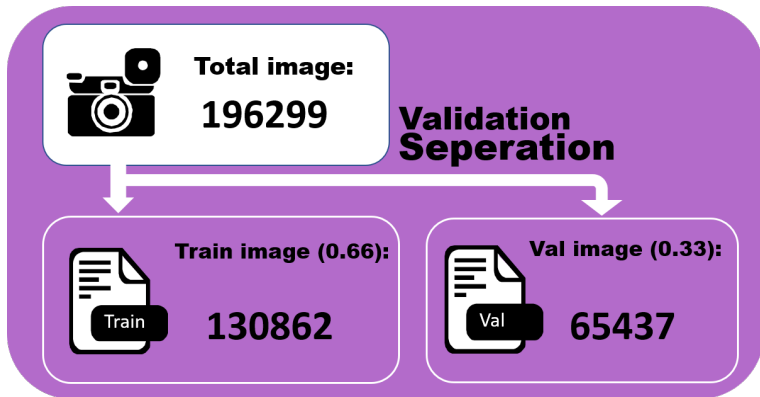
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# Methodology

訓練樣本數量

- 130862張圖片



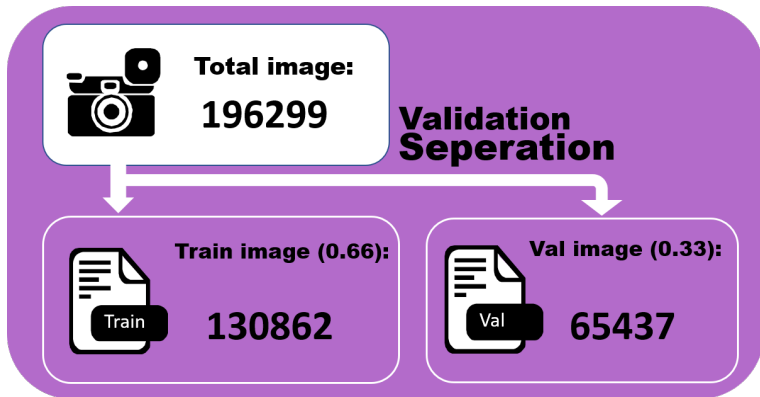
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# Dataset

驗證樣本數量

- 65437張圖片



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# Dataset

測試樣本數量

- 153730張圖片

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# Experimental Evaluation

## Experimental environment

- kaggle 競賽提供的kernel

### Sessions

Draft Session | 0m/9h | GPU On 

CPU 0.06%

RAM 247.9MB/13GB

Disk 266.3MB/4.9GB

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# Experimental Evaluation

Epochs of training

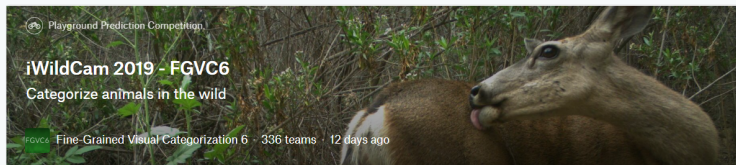
- 35個epochs

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# Experimental Evaluation

Qualitative evaluationQualitative evaluation

The banner features a close-up photograph of a deer's head in a natural, wooded setting. The deer is looking slightly to the right with its mouth slightly open. The text is overlaid on the left side of the image.

Playground Prediction Competition

## iWildCam 2019 - FGVC6

Categorize animals in the wild

FGVC6 Fine-Grained Visual Categorization 6 · 336 teams · 12 days ago

Overview Data Kernels Discussion Leaderboard Rules Team My Submissions **Late Submission**

Your most recent submission

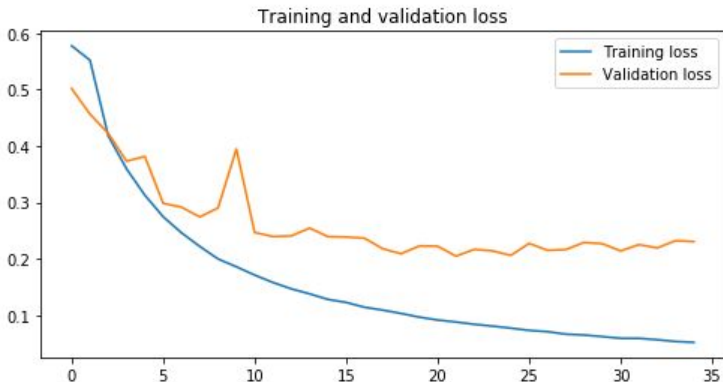
Name	Submitted	Wait time	Execution time	Score
submission.csv	7 days ago	0 seconds	2 seconds	0.125

**Complete**

[Jump to your position on the leaderboard.](#)

# Experimental Evaluation

Qualitative evaluationQualitative evaluation



# Experimental Evaluation

Qualitative evaluationQualitative evaluation

