## HW4\_E94076089\_謝獻霆

## 1. Model:

## i. Architecture

只使用兩層 convolution,其中用 batch\_normalization 與 dropout 防止 overfitting,並用 Prelu 使負值部分的斜率是根據數據來訂。

Layer (type)	Output	Shape	Param #
	/No	210 210 22\	4736
conv2d_1 (Conv2D)	(None,	310, 310, 32)	4736
batch_normalization_1 (Batch	(None,	310, 310, 32)	128
p_re_lu_1 (PReLU)	(None,	310, 310, 32)	3075200
dropout_1 (Dropout)	(None,	310, 310, 32)	0
max_pooling2d_1 (MaxPooling2	(None,	155, 155, 32)	0
conv2d_2 (Conv2D)	(None,	155, 155, 64)	51264
batch_normalization_2 (Batch	(None,	155, 155, 64)	256
p_re_lu_2 (PReLU)	(None,	155, 155, 64)	1537600
dropout_2 (Dropout)	(None,	155, 155, 64)	0
max_pooling2d_2 (MaxPooling2	(None,	77, 77, 64)	0
flatten_1 (Flatten)	(None,	379456)	0
dropout_3 (Dropout)	(None.	379456)	0
dense_1 (Dense)	(None,	1024)	388563968
p_re_lu_3 (PReLU)	(None,	1024)	1024
	(		
batch_normalization_3 (Batch	(None,	1024)	4096
dropout_4 (Dropout)	(None,	1024)	0
a. opouc_+ (o. opouc)	(none)	2027)	•
dense_2 (Dense)	(None,	3)	3075
Total params: 393.241.347			

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# 2. Preprocessing:

#### i. Method:

將資料分成三批,並依序對這些圖片做訓練。

第一種:原始圖片 5200 張

第二種:去除背景後的照片 5200 張

第三種:去除背景後再轉成黑白的照片 5200 張

剩下 400 張為 validation

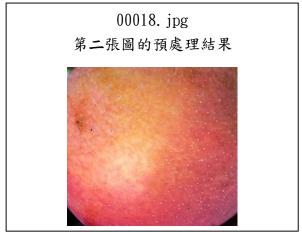
並統一經過下面的 ImageDataGenerator,轉成(310,310,3)的形式,

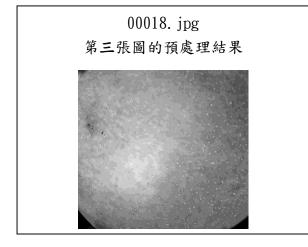
我想說圖片越大越容易找到特徵

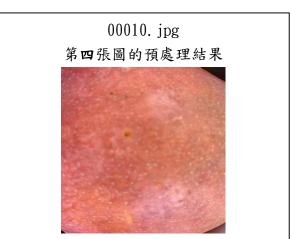
```
datagen = ImageDataGenerator(
    rotation_range=40,
    horizontal_flip=True,
    vertical_flip=True,
    fill_mode='nearest',
    rescale=1./255.
)
```

# ii. Example:









#### 3. Result:

i. Evaluation with training dataset:

Train Loss: 0.9026 Train Accuracy: 0.5809

### ii. Evaluation with testing dataset:

Test Loss: 0. 5991 Test Accuracy: 0.6025

#### iii. Confusion matrix:

		Predict		
		A	В	C
LABEL	A	21	96	22
	В	7	343	38
	С	4	151	118