

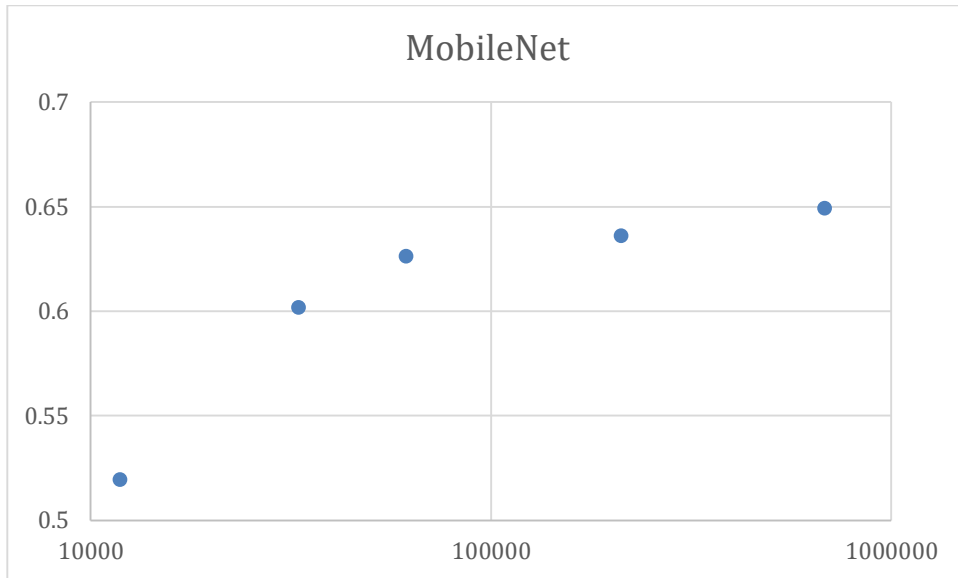
學號：B06902067 系級：資工二 姓名：許育銘

1. 請比較你本次作業的架構，參數量、結果和原 HW3 作業架構、參數量、結果做比較。(1%)

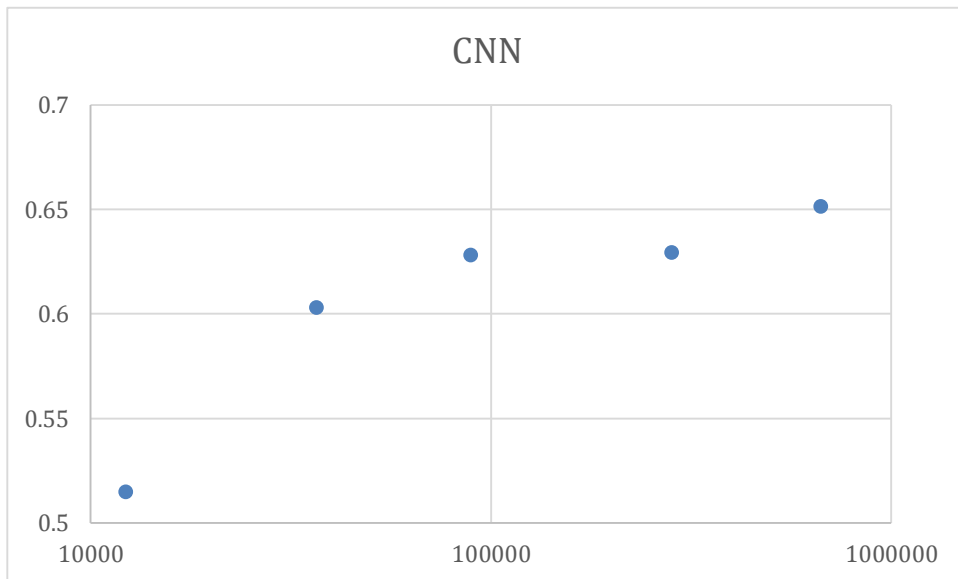
	作業 3	本次作業																																																															
架構	<table border="1"> <thead> <tr> <th>Layer (type)</th><th>Output Shape</th><th>Param #</th></tr> </thead> <tbody> <tr><td>conv2d_1 (Conv2D)</td><td>(None, 46, 46, 16)</td><td>160</td></tr> <tr><td>conv2d_2 (Conv2D)</td><td>(None, 44, 44, 32)</td><td>4640</td></tr> <tr><td>batch_normalization_1 (Batch Normalization)</td><td>(None, 44, 44, 32)</td><td>128</td></tr> <tr><td>max_pooling2d_1 (MaxPooling2D)</td><td>(None, 22, 22, 32)</td><td>0</td></tr> <tr><td>dropout_1 (Dropout)</td><td>(None, 22, 22, 32)</td><td>0</td></tr> <tr><td>conv2d_3 (Conv2D)</td><td>(None, 20, 20, 64)</td><td>18496</td></tr> <tr><td>conv2d_4 (Conv2D)</td><td>(None, 18, 18, 128)</td><td>73856</td></tr> <tr><td>batch_normalization_2 (Batch Normalization)</td><td>(None, 18, 18, 128)</td><td>512</td></tr> <tr><td>max_pooling2d_2 (MaxPooling2D)</td><td>(None, 9, 9, 128)</td><td>0</td></tr> <tr><td>dropout_2 (Dropout)</td><td>(None, 9, 9, 128)</td><td>0</td></tr> <tr><td>conv2d_5 (Conv2D)</td><td>(None, 7, 7, 192)</td><td>221376</td></tr> <tr><td>conv2d_6 (Conv2D)</td><td>(None, 5, 5, 256)</td><td>442624</td></tr> <tr><td>batch_normalization_3 (Batch Normalization)</td><td>(None, 5, 5, 256)</td><td>1024</td></tr> <tr><td>max_pooling2d_3 (MaxPooling2D)</td><td>(None, 2, 2, 256)</td><td>0</td></tr> <tr><td>dropout_3 (Dropout)</td><td>(None, 2, 2, 256)</td><td>0</td></tr> <tr><td>flatten_1 (Flatten)</td><td>(None, 1024)</td><td>0</td></tr> <tr><td>dense_1 (Dense)</td><td>(None, 128)</td><td>131200</td></tr> <tr><td>batch_normalization_4 (Batch Normalization)</td><td>(None, 128)</td><td>512</td></tr> <tr><td>dropout_4 (Dropout)</td><td>(None, 128)</td><td>0</td></tr> <tr><td>dense_2 (Dense)</td><td>(None, 7)</td><td>903</td></tr> </tbody> </table>	Layer (type)	Output Shape	Param #	conv2d_1 (Conv2D)	(None, 46, 46, 16)	160	conv2d_2 (Conv2D)	(None, 44, 44, 32)	4640	batch_normalization_1 (Batch Normalization)	(None, 44, 44, 32)	128	max_pooling2d_1 (MaxPooling2D)	(None, 22, 22, 32)	0	dropout_1 (Dropout)	(None, 22, 22, 32)	0	conv2d_3 (Conv2D)	(None, 20, 20, 64)	18496	conv2d_4 (Conv2D)	(None, 18, 18, 128)	73856	batch_normalization_2 (Batch Normalization)	(None, 18, 18, 128)	512	max_pooling2d_2 (MaxPooling2D)	(None, 9, 9, 128)	0	dropout_2 (Dropout)	(None, 9, 9, 128)	0	conv2d_5 (Conv2D)	(None, 7, 7, 192)	221376	conv2d_6 (Conv2D)	(None, 5, 5, 256)	442624	batch_normalization_3 (Batch Normalization)	(None, 5, 5, 256)	1024	max_pooling2d_3 (MaxPooling2D)	(None, 2, 2, 256)	0	dropout_3 (Dropout)	(None, 2, 2, 256)	0	flatten_1 (Flatten)	(None, 1024)	0	dense_1 (Dense)	(None, 128)	131200	batch_normalization_4 (Batch Normalization)	(None, 128)	512	dropout_4 (Dropout)	(None, 128)	0	dense_2 (Dense)	(None, 7)	903	<p>因為 model.summary 太長，所以用文字說明。</p> <p>定義一個 mobile_conv(n, (k,k))如下： DepthwiseConv2D((k,k)) BatchNormalization() LeakyReLU() Conv2D(n, (1,1)) BatchNormalization()</p> <p>model 架構如下： Conv2D(32, (3,3)) mobile_conv(32, (3,3)) mobile_conv(32, (3,3)) Maxpooling2D((2,2)) mobile_conv(48, (3,3)) mobile_conv(48, (3,3)) mobile_conv(64, (3,3)) Maxpooling2D((2,2)) mobile_conv(64, (3,3)) mobile_conv(96, (3,3)) mobile_conv(96, (3,3)) Maxpooling2D((2,2)) Dense(7)</p> <p>最後把精度從 float32 降為 float16</p>
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參數量	895431	61287																																																															
結果	public:0.64391 private:0.64586	public:0.64781 private:0.63806																																																															

2. 請使用 MobileNet 的架構，畫出參數量-acc 的散布圖（橫軸為參數量，縱軸為 accuracy，且至少 3 個點，參數量選擇時儘量不要離的太近，結果選擇只要大致收斂，不用 train 到最好沒關係。）(1%)

註：2、3 題皆用 kaggle 上的 public score



3. 請使用一般 CNN 的架構，畫出參數量-acc 的散布圖（橫軸為參數量，縱軸為 accuracy，且至少 3 個點，參數量選擇時儘量不要離的太近，結果選擇只要大致收斂，不用 train 到最好沒關係。）(1%)



4. 請你比較題 2 和題 3 的結果，並請針對當參數量相當少的時候，如果兩者參數量相當，兩者的差異，以及你認為為什麼會造成這個原因。(2%)

就我的結果而言，兩者整體的表現差不多，在參數量少(約 10000)的時候表現也差不多，所以其實沒有什麼差異。