

2022 深度學習 作業一 報告

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壹、Regression：

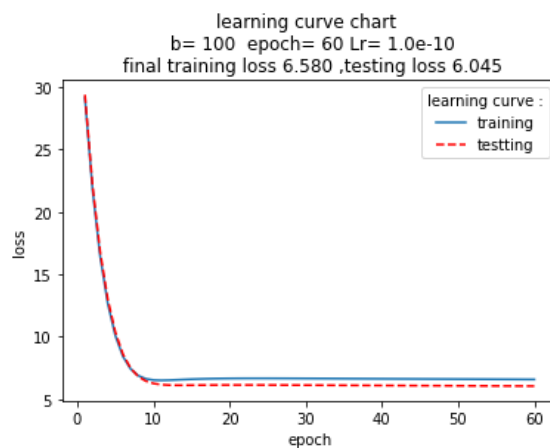
A. 程式於附檔 HW01_1_3Layer_with_batch.py

Epoch = 60、Batch = 100、Learning rate = $1e-10$

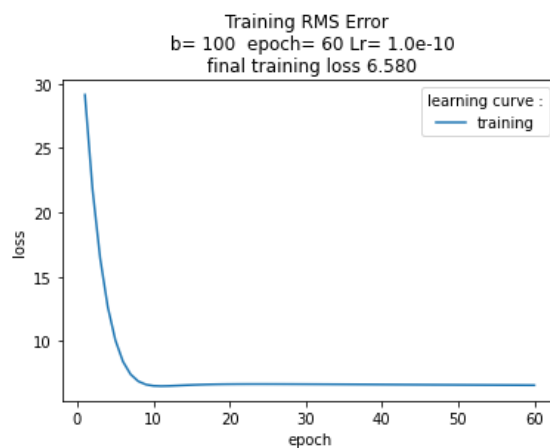
B. 作業相關圖表

1. Network Architecture：[17 - 32 - 16 - 1]

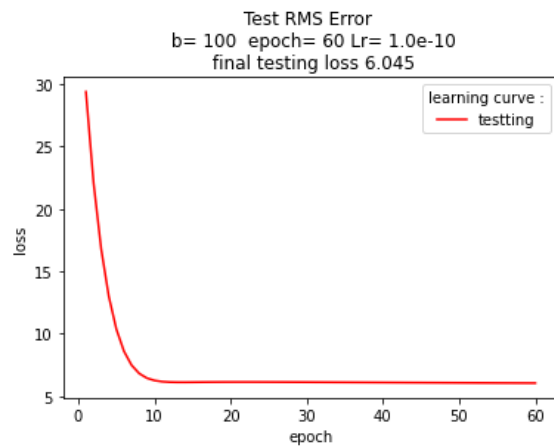
2. Learning Curve：



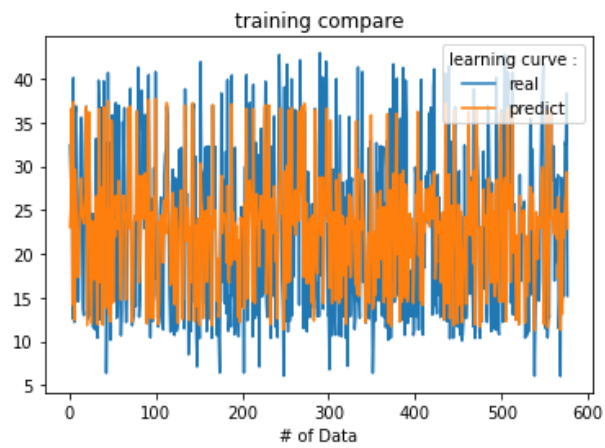
3. Training RMS Error：6.580



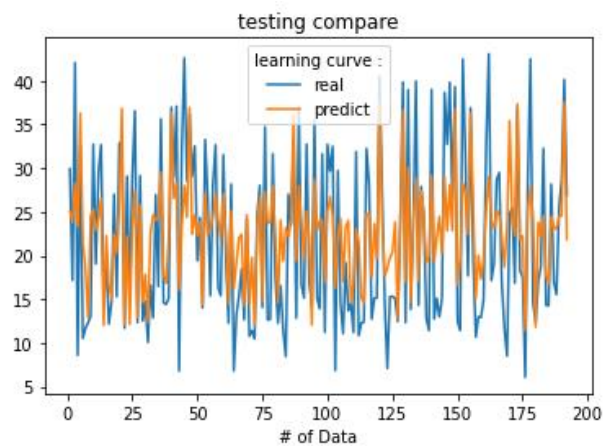
4. Test RMS Error : 6.045



5. Regression Result with Training Labels :



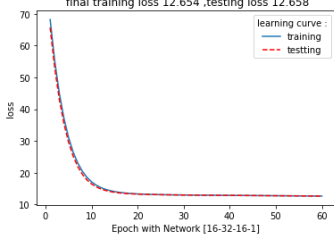
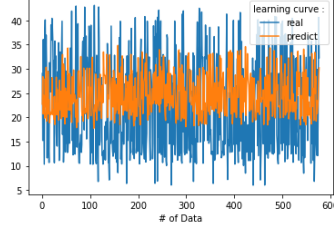
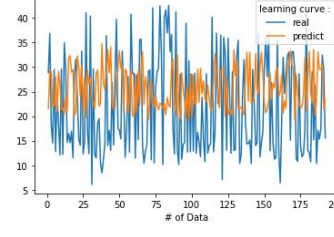
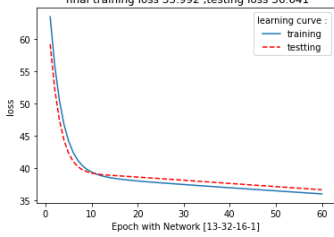
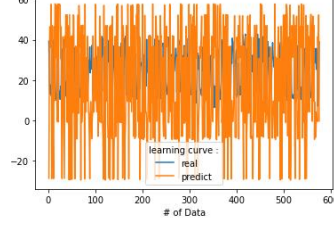
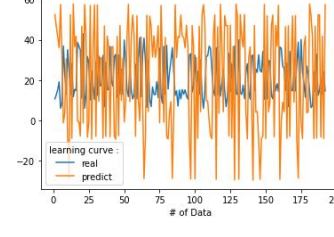
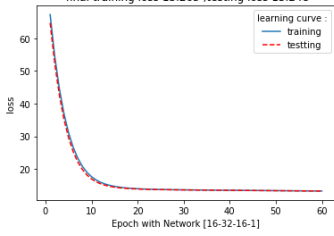
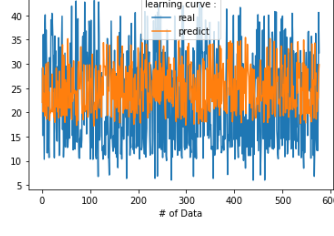
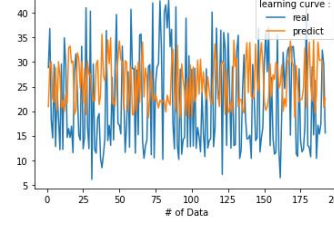
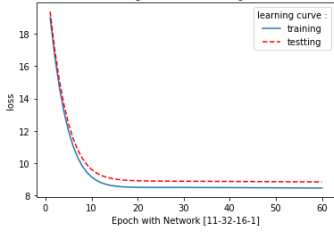
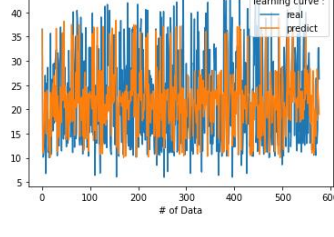
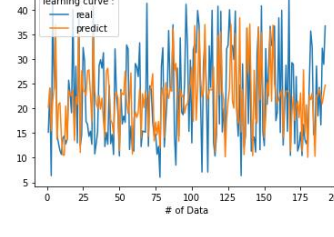
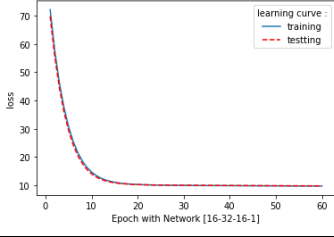
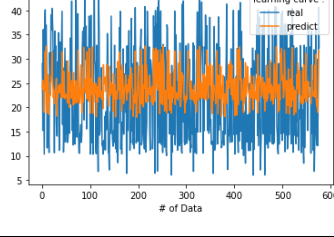
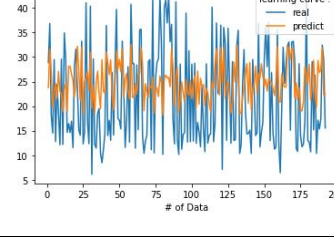
6. Regression Result with Test Labels :



C. 將特徵逐一抽掉來觀察模型的學習效果：

實驗之後發現當“Orientation”被抽取掉之後，模型的 training loss 從原先的“6.580”變成“35.992”，回歸結果也跟與目標值差距最大，因此得知“Orientation”為模型學習影響最大的關鍵。

隨機種子#600	學習曲線	訓練成果	測試成果
原始 [17-32-16-1]			
# Relative Compactness [16-32-16-1]			
Surface Area [16-32-16-1]			
Wall Area [16-32-16-1]			
Roof Area [16-32-16-1]			

<p>Overall Height</p> <p>[16 – 32 – 16 – 1]</p>	<p>learning curve chart</p> <p>b= 100 epoch= 60 Lr= 1.0e-10 final training loss 12.654 ,testing loss 12.658</p> 	<p>training compare</p> 	<p>testing compare</p> 
<p>Orientation</p> <p>➔ 差距最大</p> <p>[13 – 32 – 16 – 1]</p>	<p>learning curve chart</p> <p>b= 100 epoch= 60 Lr= 1.0e-10 final training loss 35.992 ,testing loss 36.641</p> 	<p>training compare</p> 	<p>testing compare</p> 
<p>Glazing Area</p> <p>[16 – 32 – 16 – 1]</p>	<p>learning curve chart</p> <p>b= 100 epoch= 60 Lr= 1.0e-10 final training loss 13.265 ,testing loss 13.248</p> 	<p>training compare</p> 	<p>testing compare</p> 
<p>Glazing Area</p> <p>Distribution</p> <p>[11 – 32 – 16 – 1]</p>	<p>learning curve chart</p> <p>b= 100 epoch= 60 Lr= 1.0e-10 final training loss 8.466 ,testing loss 8.845</p> 	<p>training compare</p> 	<p>testing compare</p> 
<p>Cooling Load</p> <p>[16 – 32 – 16 – 1]</p>	<p>learning curve chart</p> <p>b= 100 epoch= 60 Lr= 1.0e-10 final training loss 9.684 ,testing loss 9.745</p> 	<p>training compare</p> 	<p>testing compare</p> 

貳、Classification：

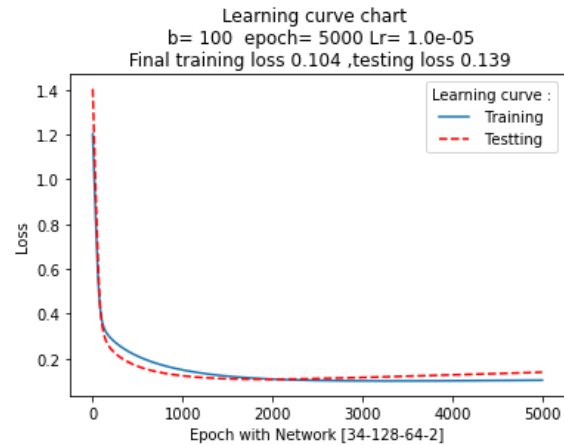
A. 程式於附檔 HW01_2_3Layer_with_batch.py

Epoch = 5000、Batch = 100、Learning rate = $1e-5$

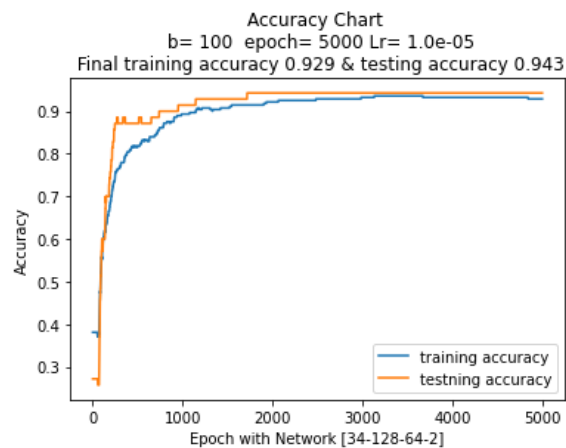
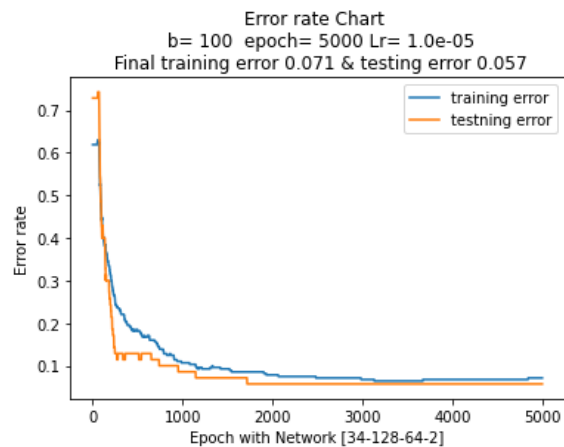
B. 作業相關圖表

1. Network Architecture：[34 – 128 – 64 – 2]

2. Learning Curve：



3. Training Error Rate & Test Error Rate：7.1% & 5.7%



C. 散佈圖

