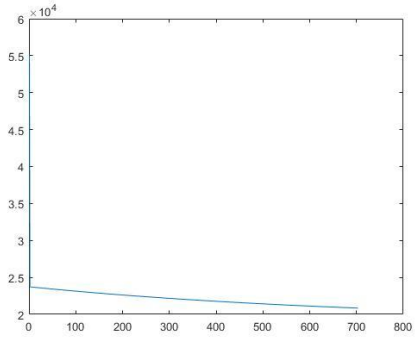
Deep Learning hw1

1 regression

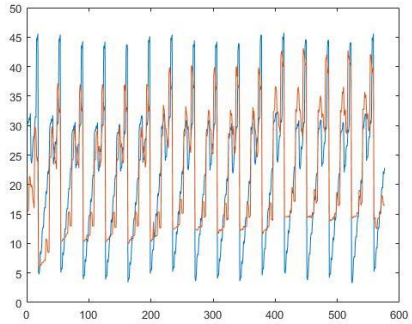
i.

(1)ALL FEATURE

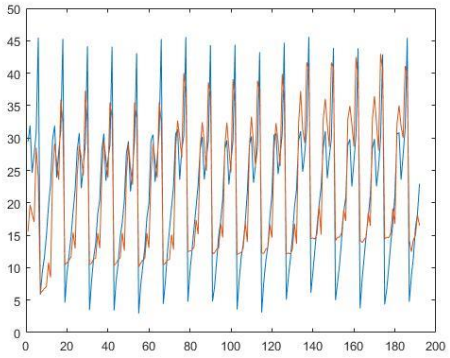
Network Architecture	16 – 5 – 4 – 1
Selected features	All Features
Training E_{RMS}	5.9625
Test E_{RMS}	6.0562



learning curve

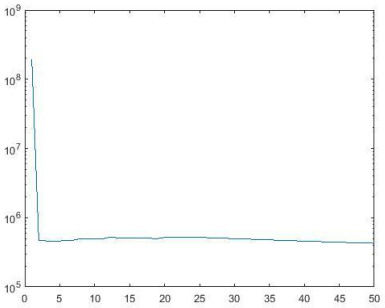


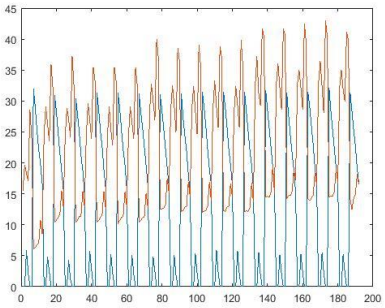
training regression result

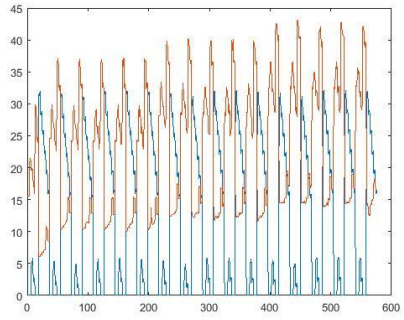


testing regression result

(2)without the first feature

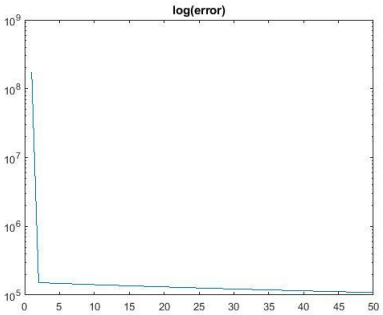


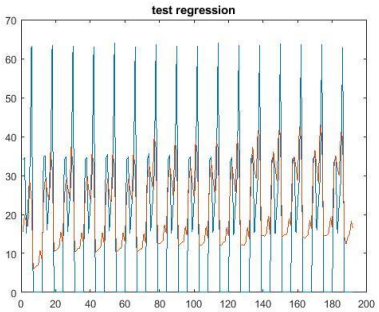


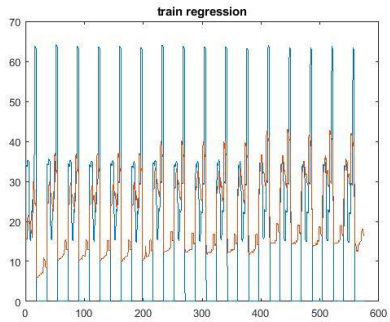


Training E_{RMS}	13.9625
Test E_{RMS}	14.0562

(3)without the second feature







Training E_{RMS}	13.7667
Test E_{RMS}	13.7948

(3) without the third feature

Training E_{RMS}	33.7473
Test E_{RMS}	33.3946

(4) without the fourth feature

Training E_{RMS}	31.7629
Test E_{RMS}	32.7845

(5) without the fifth feature

Training E_{RMS}	11.7667
Test E_{RMS}	11.7948

(6) without the sixth feature

Training E_{RMS}	15.7424
Test E_{RMS}	15.7648

(7) without the seventh feature

Training E_{RMS}	43.2667
Test E_{RMS}	43.2948

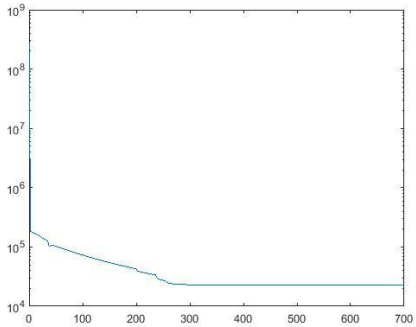
(8) without the eighth feature

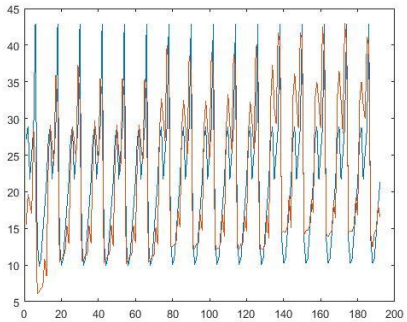
Training E_{RMS}	12.1357
Test E_{RMS}	12.1948

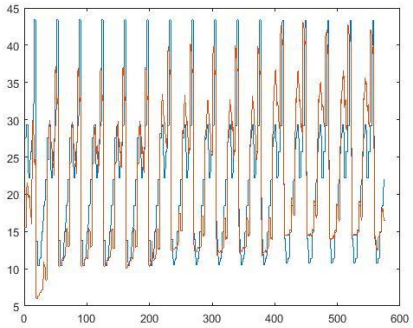
ii. 3 significant features

We found that there are three key features control the dataset. The figures and chart are as follows.

Network Architecture	16 – 5 – 4 – 1
Selected features	Wall area, roof area, glazing area
Training E_{RMS}	5.6188
Test E_{RMS}	5.6248

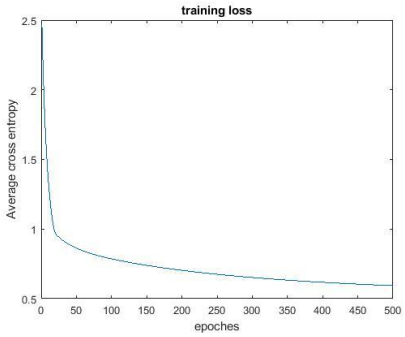


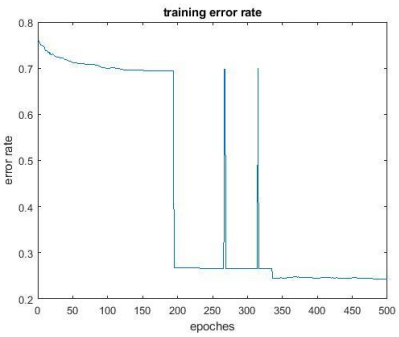


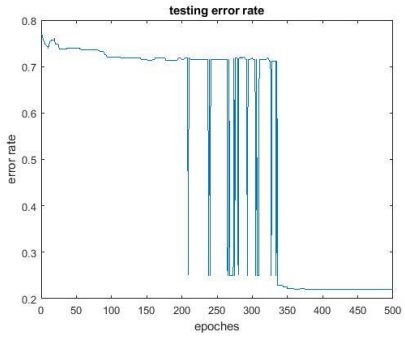


2. classification

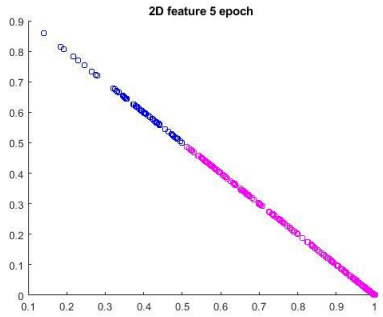
i.

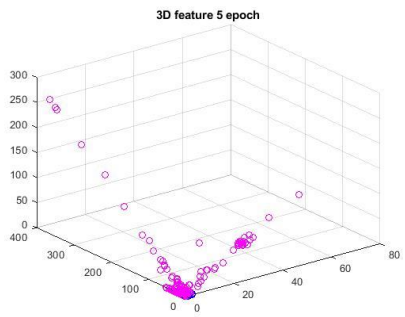


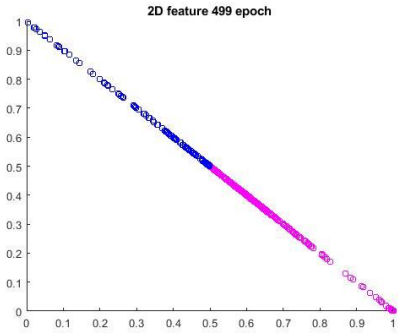


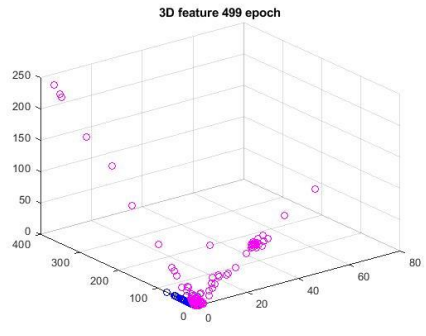


ii.









iii.

We found that as the epoch increase, the separation of the data becomes better. The error rate decreases because of the separation of the data in the latent space.