



Character Recognition Project Report

Neural Networks Course

Presented by:

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Sample Runs:

1.

Input Form

Layer's Information

Hidden Layers: 1

No. of Neurons / Layer:

	#Neurons/Layer
*	30

Learning Parameters

Activation Function: Sigmoid

Slope: 1

Learning Rate: 0.1

Error Threshold: 0.4

PCA Data Reduction

☒ Apply PCA

No. of Epochs: 30

No. of Principal Components: 50

Learning Rate: 0.01

Output

Mismatching Samples: 34

Accuracy Rate: 38%

Mean Squared Error: 0.39882482012682

Train

2.

Input Form

Layer's Information

Hidden Layers: 2

No. of Neurons / Layer:

	#Neurons/Layer
	30
▶	6

Learning Parameters

Activation Function: Tanh

Learning Rate: 0.1

Error Threshold: 0.6

PCA Data Reduction

☒ Apply PCA

No. of Epochs: 50

No. of Principal Components: 50

Learning Rate: 0.01

Output

Mismatching Samples: 33

Accuracy Rate: 40%

Mean Squared Error: 0.599818754007103

Train

3.

Input Form

Layer's Information

Hidden Layers: 2

No. of Neurons / Layer:

	#Neurons/Layer
	20
▶	7

Learning Parameters

Activation Function: Tanh

Learning Rate: 0.1

Error Threshold: 0.08

PCA Data Reduction

☐ Apply PCA

No. of Epochs: 50

No. of Principal Components: 50

Learning Rate: 0.01

Output

Mismatching Samples: 15

Accuracy Rate: 73%

Mean Squared Error: 0.0797934183401664

Train

4.

Input Form

Layer's Information

Hidden Layers: 1

No. of Neurons / Layer:

	#Neurons/Layer
*	30

Learning Parameters

Activation Function: Tanh

Learning Rate: 0.1

Error Threshold: 0.01

PCA Data Reduction

☐ Apply PCA

No. of Epochs: 50

No. of Principal Components: 50

Learning Rate: 0.01

Output

Mismatching Samples: 11

Accuracy Rate: 80%

Mean Squared Error: 0.00988458760593241

Train

5.

Input Form

Layer's Information

Hidden Layers: 1

No. of Neurons / Layer:

	#Neurons/Layer
*	30

Learning Parameters

Activation Function: Sigmoid

Slope: 1

Learning Rate: 0.6

Error Threshold: 0.4

PCA Data Reduction

☒ Apply PCA

No. of Epochs: 50

No. of Principal Components: 50

Learning Rate: 0.01

Output

Mismatching Samples: 33

Accuracy Rate: 40%

Mean Squared Error: 0.39049283105881

Train

Best Run with PCA:

Input Form

Layer's Information

Hidden Layers: 1

No. of Neurons / Layer:

	#Neurons/Layer
*	30

Learning Parameters

Activation Function: Sigmoid

Slope: 1

Learning Rate: 0.6

Error Threshold: 0.4

PCA Data Reduction

☒ Apply PCA

No. of Epochs: 50

No. of Principal Components: 50

Learning Rate: 0.01

Output

Mismatching Samples: 33

Accuracy Rate: 40%

Mean Squared Error: 0.39049283105881

Train

Best Run without PCA:

Input Form

Layer's Information

Hidden Layers: 2

No. of Neurons / Layer:

	#Neurons/Layer
	30
▶	6

Learning Parameters

Activation Function: Tanh

Learning Rate: 0.1

Error Threshold: 0.01

PCA Data Reduction

☐ Apply PCA

No. of Epochs: 50

No. of Principal Components: 50

Learning Rate: 0.01

Output

Mismatching Samples: 10

Accuracy Rate: 82%

Mean Squared Error: 0.00883283642313278

Train