

# **Ahsanullah University of Science and Technology**

*Department of Computer Science and Engineering*



**Course Title:** Soft Computing Lab

**Course No:** CSE4238

## **Assignment 2**

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**Group:** B1

**Section:** B

**Semester:** 2nd

**Year:** 4th

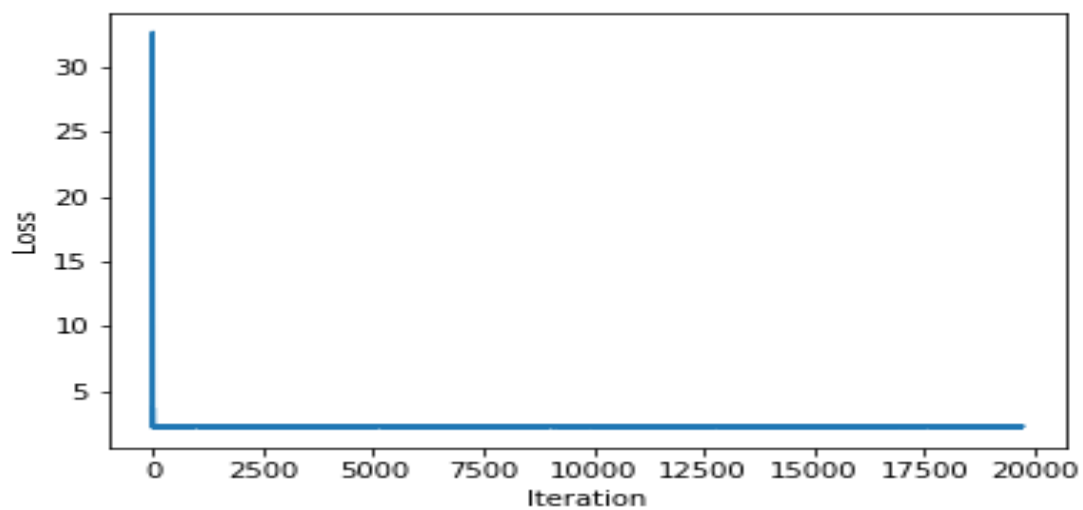
**Department:** CSE

### Comparison (Dataset 1):

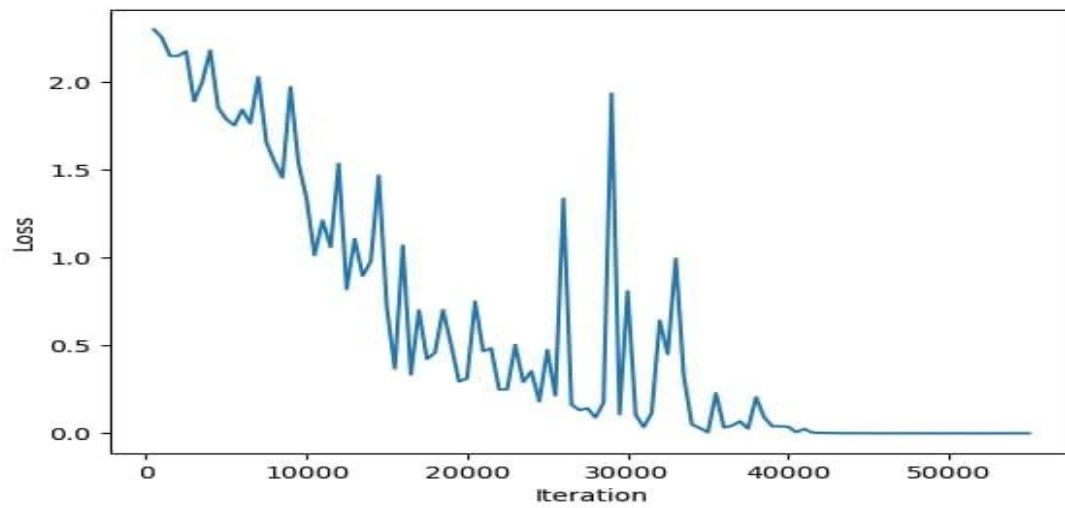
Factors	Experiment 1	Experiment 2
Batch size	20	128
Number of iterations	20000	55000
Input dimension	180*180	180*180
Output dimension	10	10
Learning rate	0.01	0.06
Number of hidden units/layer	200	200
Number of hidden layers	6	6
Activation function	Adam	SGD
Loss	2.322449207305908	8.38057603687048e-05
Accuracy	9.439228622177112	89.57117482872367

There are differences being seen in batch size, number of iterations, learning rate, and activation function. Experiment 2 setup took over the first one as it achieved about 89% accuracy.

### Loss Curve (Dataset 1):



Experiment 1

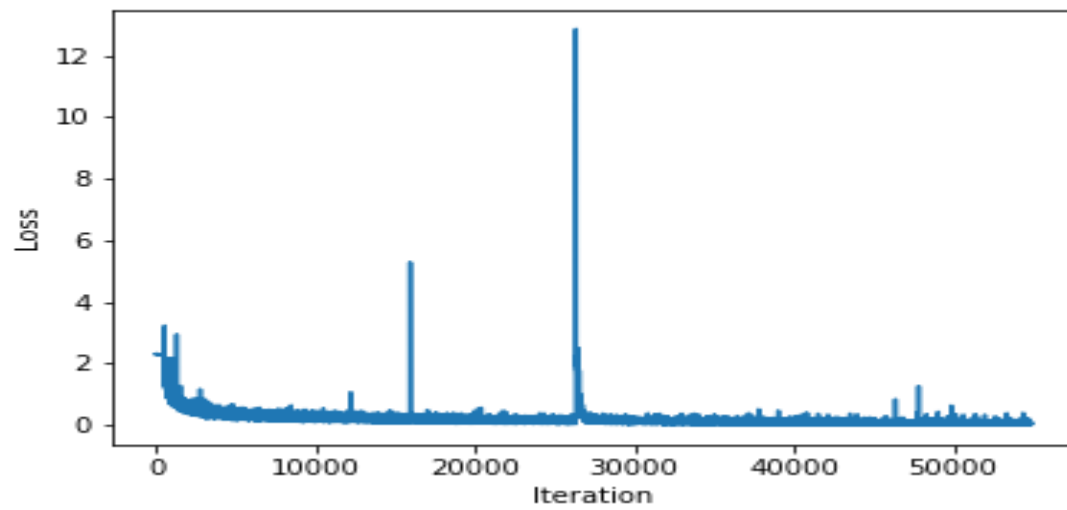


Experiment 2

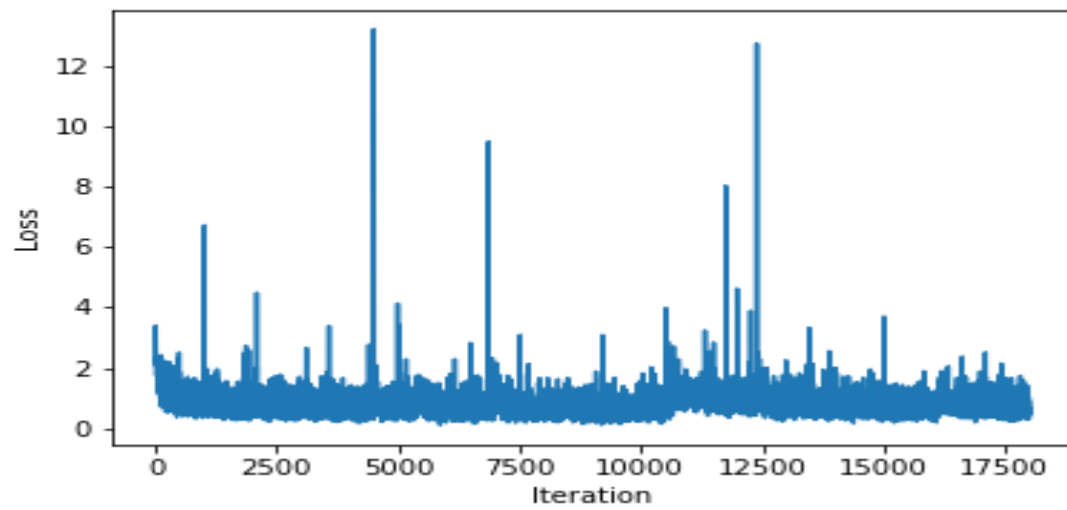
### Comparison (Dataset 2):

Factors	Experiment 1	Experiment 2
Batch size	20	128
Number of iterations	20000	55000
Input dimension	28*28	28*28
Output dimension	10	10
Learning rate	0.01	0.06
Number of hidden units/layer	200	200
Number of hidden layers	6	6
Activation function	Adam	SGD
Loss	0.6789566278457642	0.035543639212846756
Accuracy	75.26	89.42

### Loss Curve (Dataset 2):



Experiment 1



Experiment 2

### **Comparison (Experiment 2):**

Factors	Dataset 1	Dataset 2
Batch size	128	128
Number of iterations	55000	55000
Input dimension	180*180	28*28
Output dimension	10	10
Learning rate	0.06	0.06
Number of hidden units/layer	200	200
Number of hidden layers	6	6
Activation function	SGD	SGD
Loss	8.38057603687048e-05	0.035543639212846756
Accuracy	89.57117482872367	89.42

Two different datasets were trained on the same model above and can be said that the model has low bias and low variance as it fitted both of the datasets well.

**Github link:** [https://github.com/AbuUbaida/handwritten\\_digit\\_classifier\\_bangla](https://github.com/AbuUbaida/handwritten_digit_classifier_bangla)