Bangladesh University of Engineering & Technology

Programming Assignment 1

Course No: CSE 6709

Course Name: Deep Learning

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(a)

Using Only MLP Network with 3 layers

Hyper Parameters	Batch	Epochs	Learning Rate	Accuracy (%)
1.	8	**10**	**0.001**	**80.8**
	16	**10**	**0.001**	67.45
	32	**10**	**0.001**	42.46
2.	**16**	1	**0.001**	17.99
	16	5	**0.001**	62.74
	16	10	**0.001**	67.45
	16	20	0.001	83.57
3.	**16**	**10**	0.0001	66.95
	16	**10**	0.001	67.45
	16	**10**	0.01	75.74

(b)

A convolutional layer followed by a pooling layer and then feed the output to the first MLP layer. The other parameters are kept in default value.

Batch	Epochs	Learning Rate	Pooling Layer
16	**10**	**0.001**	2x2

	Output Channels	Filter Size	Accuracy (%)
1.	1	2×2	60.36
2.	10	3×3	**82.22**
3.	10	4×4	72.35

(c)

A 2nd convolutional layer is added.

Batch	Epochs	Learning Rate	Pooling Layer
16	**10**	**0.001**	2x2

Hyper Parameters	Output Channels	Filter Size	Accuracy (%)
1.	10	2×2	Error
2.	10	3×3	98.42

As the image resolution is 28*28, if kernel size=2, Output = (28-2+2*1)/1+1=29 which is not divisible by 2. Down sampling by pooling cannot be done here.

If kernel size=3, Output = (28-3+2*1)/1+1=28 which is not divisible by 2. Down sampling by pooling can be done here.