

Deep Learning FSS22
Assignment 2: CNNs and RNNs

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Contents

1	Convolutional Neural Networks	1
1.1	a)	1
1.2	b)	1
1.3	c)	2
1.4	d)	2
1.5	e)	2
2	Recurrent Neural Networks and Pretraining	3
2.1	a)	3
2.2	b)	3
2.3	c)	3
2.4	d)	3
2.5	e)	3

1 Convolutional Neural Networks

1.1 a)

- (i) *3x3 convolutional layer with bias, 1 input channel, 32 output channels, stride 1, padding 1 on each side*

Input: 28x28x1

Output: 28x28x32

No. of Parameters: 32 3x3 kernel matrices and 32 bias terms

- (ii) *Logistic activation function*

Input: 28x28x32

Output: 28x28x32

No. of Parameters: none

- (iii) *2x2 max-pooling layer with stride 2*

Input: 28x28x32

Output: 14x14x32

No. of Parameters: none

- (iv) Linear layer with 10 hidden units

Input: 14x14x32

Output: 10

No. of Parameters: $10 \times 6270 = 62720$

- (v) Log-softmax function

Input: 10

Output: 10

No. of Parameters: 10

Interpretation: log-probabilities for the 10 different classes of clothing.

1.2 b)

Cf. Code.

1.3 c)

Cf. code.

1.4 d)

Cf. Code.

1.5 e)

2 Recurrent Neural Networks and Pretraining

2.1 a)

Cf. Code.

2.2 b)

2.3 c)

2.4 d)

2.5 e)

References