INLP A2 Report

Jai Bhatnagar (2021111029)

February 2024

Models

OneDrive Link : Link

Best 3 RNNs

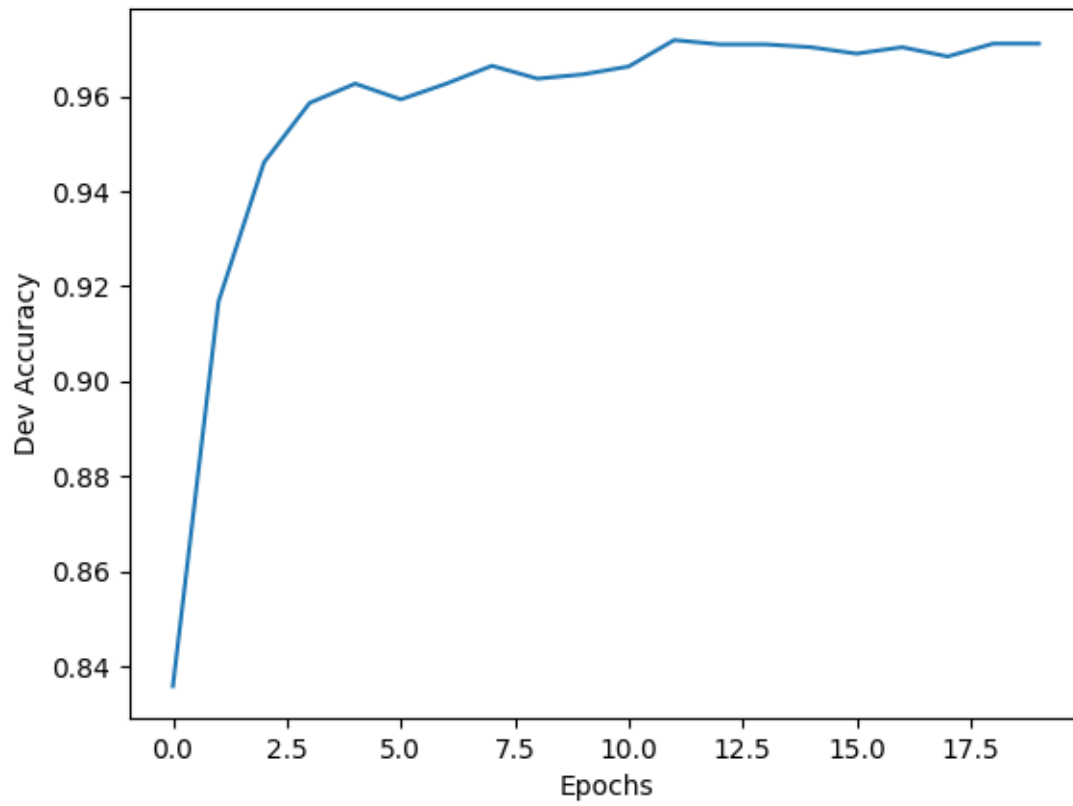### Hyperparameter set 1

Batch Size = 32
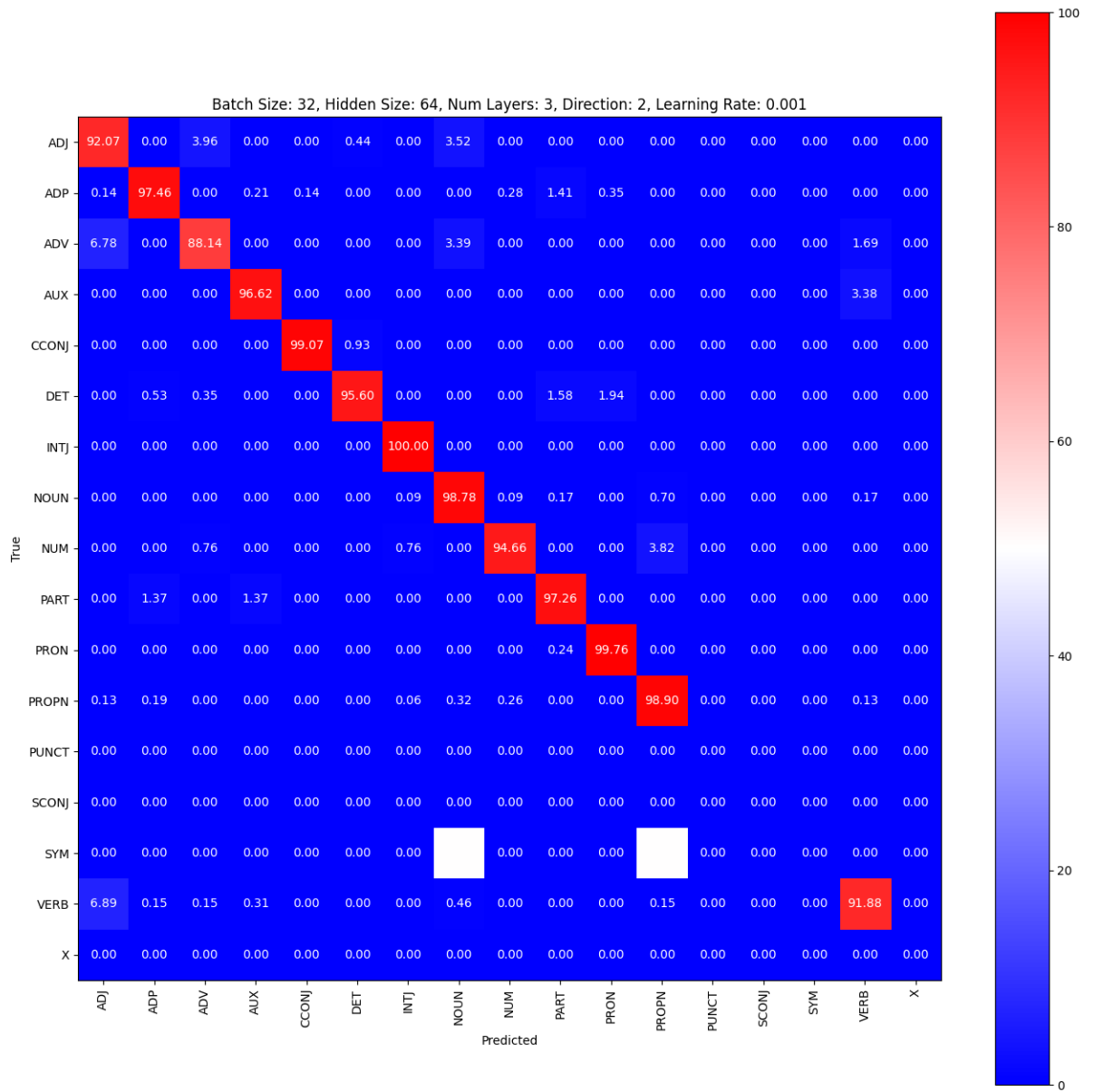Hidden size = 64
No. of layers = 3
Directions = 2
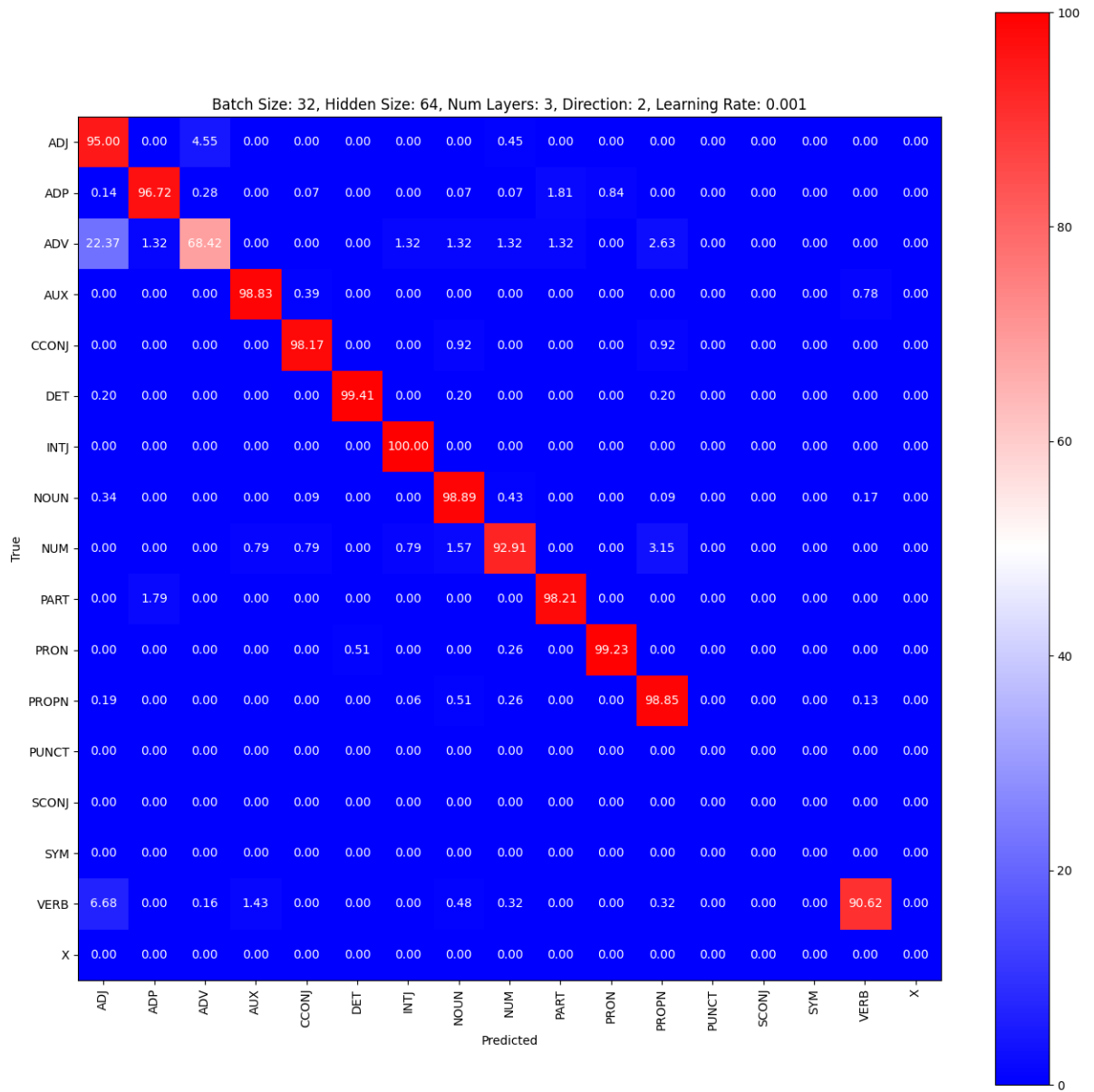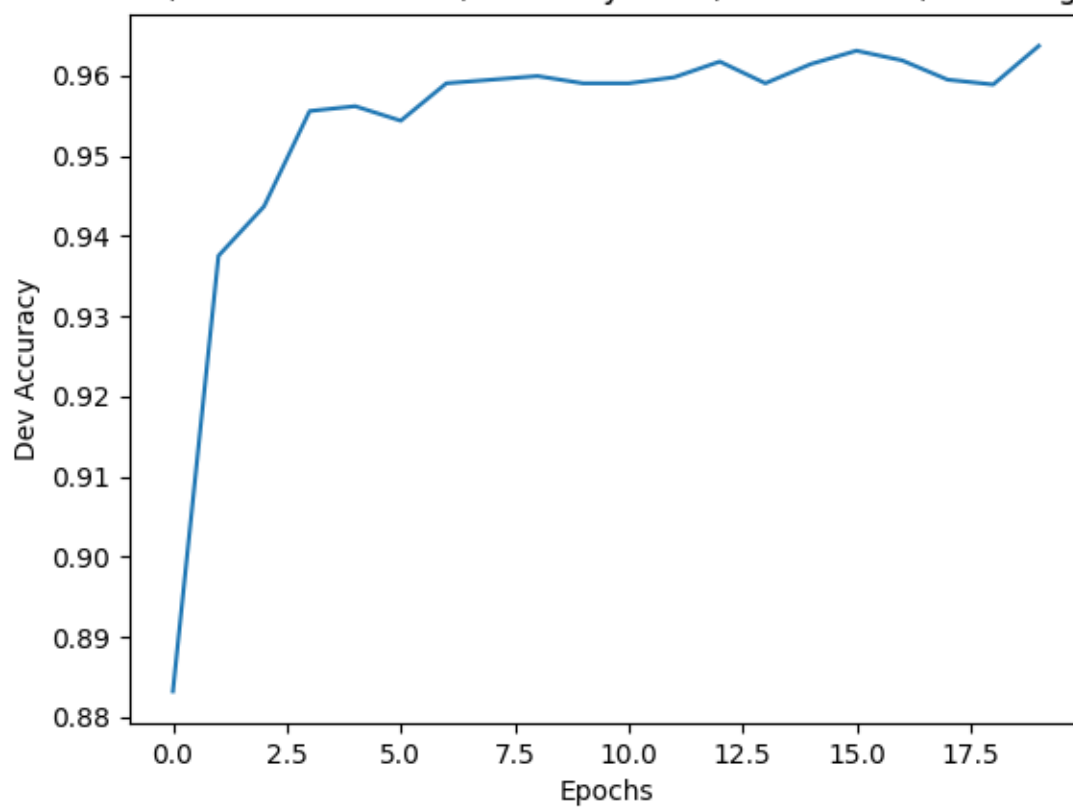Learning Rate = 0.001

Dev Accuracy vs Epochs

atch Size: 32, Hidden Size: 64, Num Layers: 3, Direction: 2, Learning Rate: 0.

Dev Confusion Matrix

Batch Size: 32, Hidden Size: 64, Num Layers: 3, Direction: 2, Learning Rate: 0.001

True \ Predicted	ADJ	ADP	ADV	AUX	CCONJ	DET	INTJ	NOUN	NUM	PART	PRON	PROPN	PUNCT	SCONJ	SYM	VERB	X
ADJ	92.07	0.00	3.96	0.00	0.00	0.44	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADP	0.14	97.46	0.00	0.21	0.14	0.00	0.00	0.00	0.28	1.41	0.35	0.00	0.00	0.00	0.00	0.00	0.00
ADV	6.78	0.00	88.14	0.00	0.00	0.00	0.00	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69	0.00
AUX	0.00	0.00	0.00	96.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.38	0.00
CCONJ	0.00	0.00	0.00	0.00	99.07	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DET	0.00	0.53	0.35	0.00	0.00	95.60	0.00	0.00	0.00	1.58	1.94	0.00	0.00	0.00	0.00	0.00	0.00
INTJ	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOUN	0.00	0.00	0.00	0.00	0.00	0.09	0.00	98.78	0.09	0.17	0.00	0.70	0.00	0.00	0.00	0.17	0.00
NUM	0.00	0.00	0.76	0.00	0.00	0.00	0.76	0.00	94.66	0.00	0.00	3.82	0.00	0.00	0.00	0.00	0.00
PART	0.00	1.37	0.00	1.37	0.00	0.00	0.00	0.00	0.00	97.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRON	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	99.76	0.00	0.00	0.00	0.00	0.00	0.00
PROPN	0.13	0.19	0.00	0.00	0.00	0.00	0.06	0.32	0.26	0.00	0.00	98.90	0.00	0.00	0.00	0.13	0.00
PUNCT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCONJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SYM	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
VERB	6.89	0.15	0.15	0.31	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.15	0.00	0.00	0.00	91.88	0.00
X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Test Confusion Matrix

Batch Size: 32, Hidden Size: 64, Num Layers: 3, Direction: 2, Learning Rate: 0.001
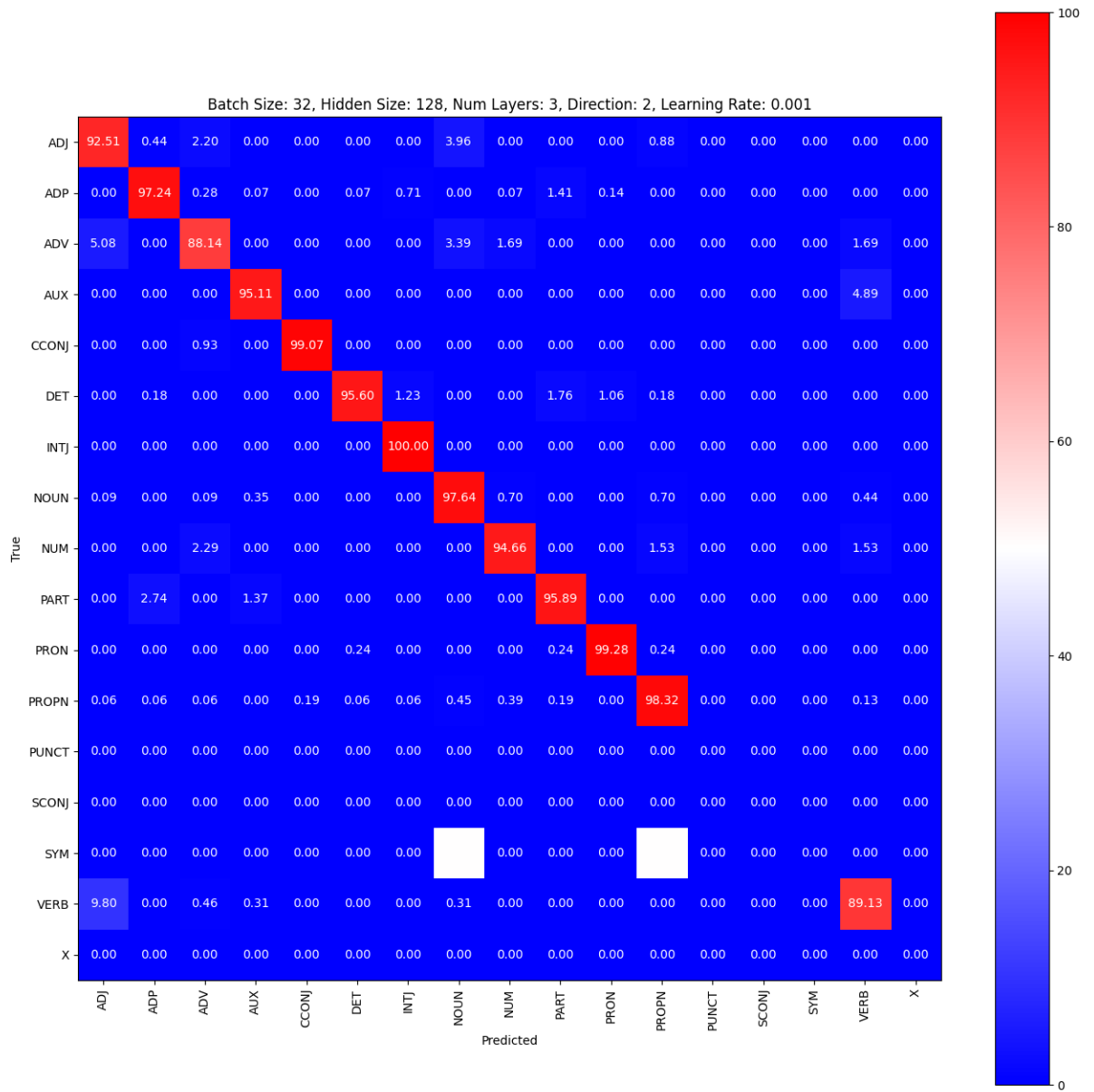
Hyperparameter set 2

Batch Size = 32
Hidden size = 128
No. of layers = 3
Directions = 2
Learning Rate = 0.001

Dev Accuracy vs Epochs

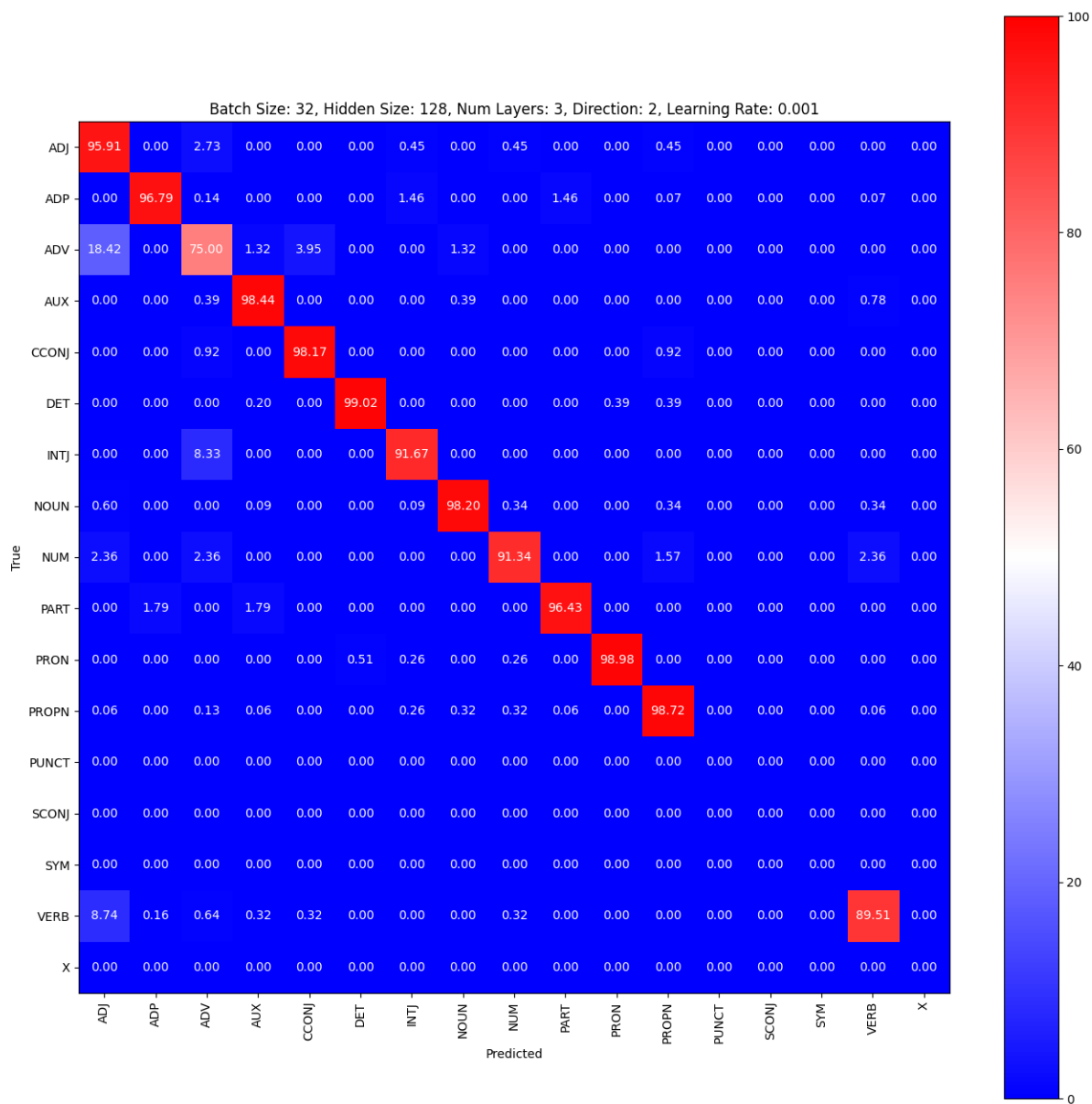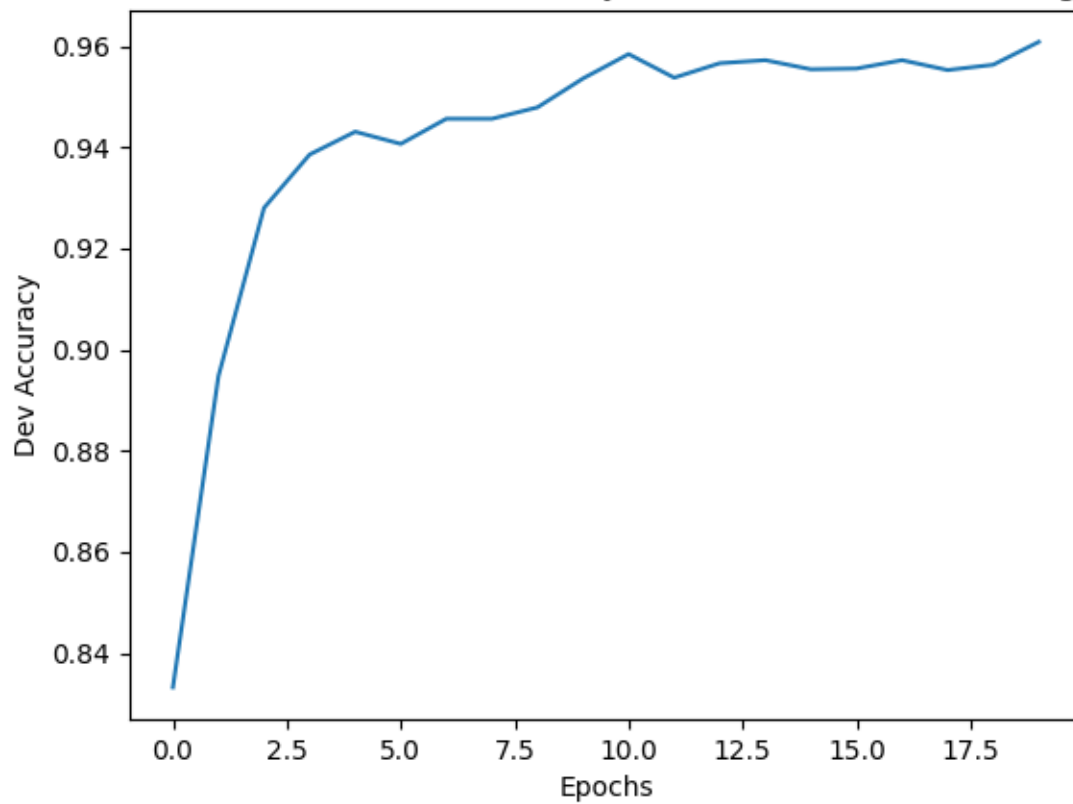itch Size: 32, Hidden Size: 128, Num Layers: 3, Direction: 2, Learning Rate: 0

Dev Confusion Matrix

Batch Size: 32, Hidden Size: 128, Num Layers: 3, Direction: 2, Learning Rate: 0.001

Test Confusion Matrix

Batch Size: 32, Hidden Size: 128, Num Layers: 3, Direction: 2, Learning Rate: 0.001
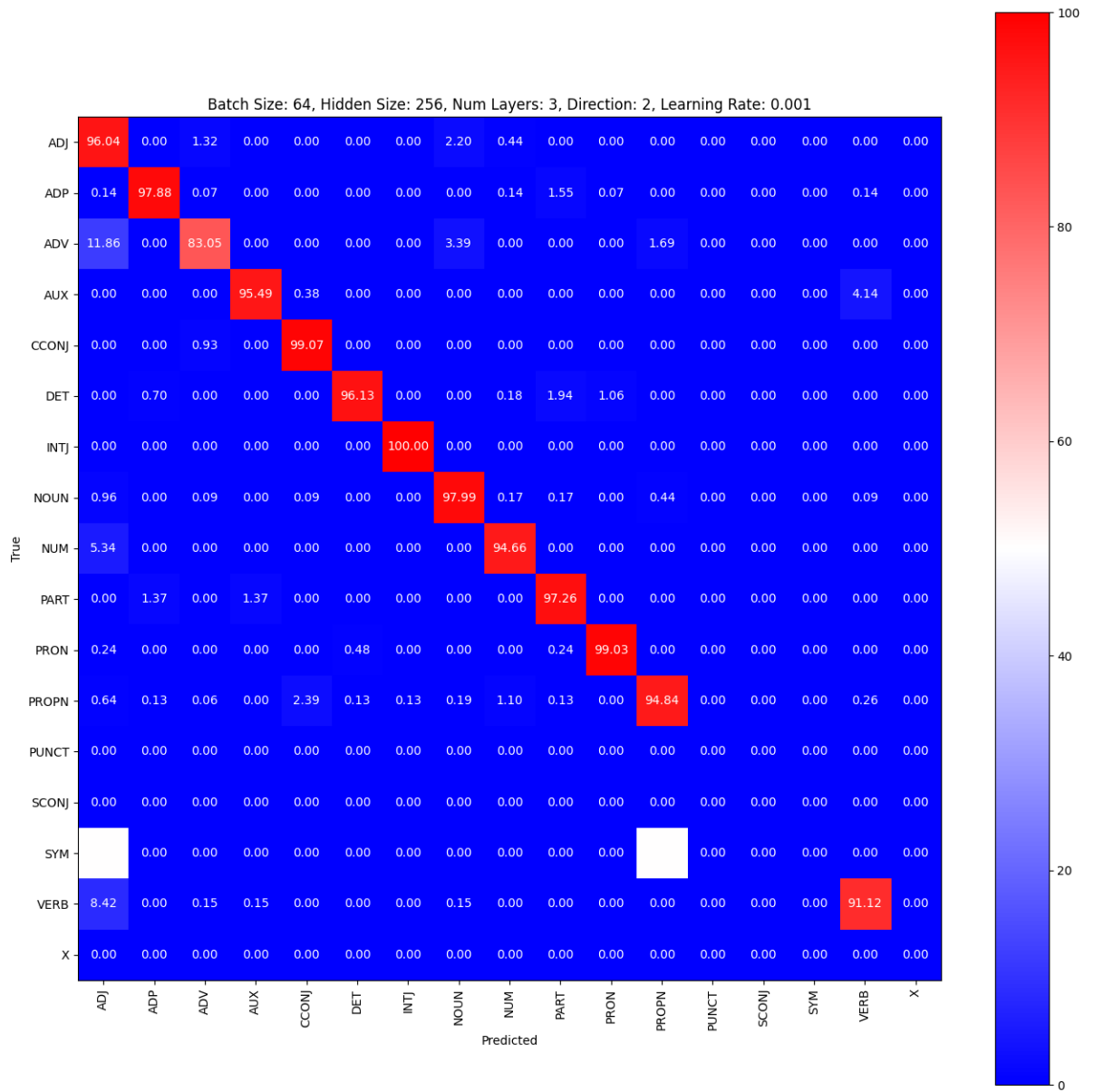
Hyperparameter set 3

Batch Size = 64
Hidden size = 256
No. of layers = 3
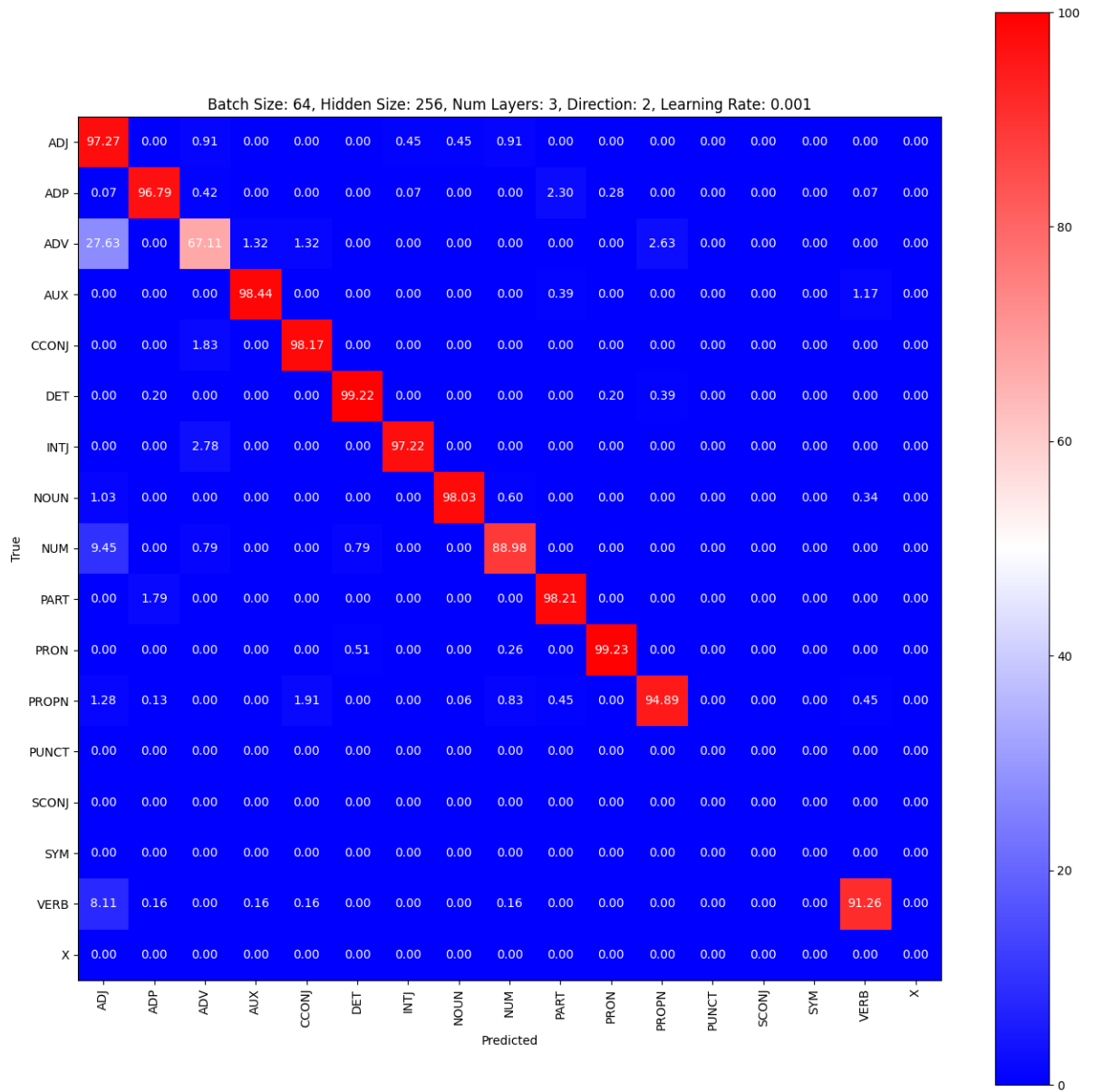Directions = 2
Learning Rate = 0.001

Dev Accuracy vs Epochs

ltch Size: 64, Hidden Size: 256, Num Layers: 3, Direction: 2, Learning Rate: 0

Dev Confusion Matrix

Batch Size: 64, Hidden Size: 256, Num Layers: 3, Direction: 2, Learning Rate: 0.001

Test Confusion Matrix

Batch Size: 64, Hidden Size: 256, Num Layers: 3, Direction: 2, Learning Rate: 0.001

Best 3 ANNs

Hyperparameter set 1

Context Size = 1
Hidden Layer Sizes = [64]
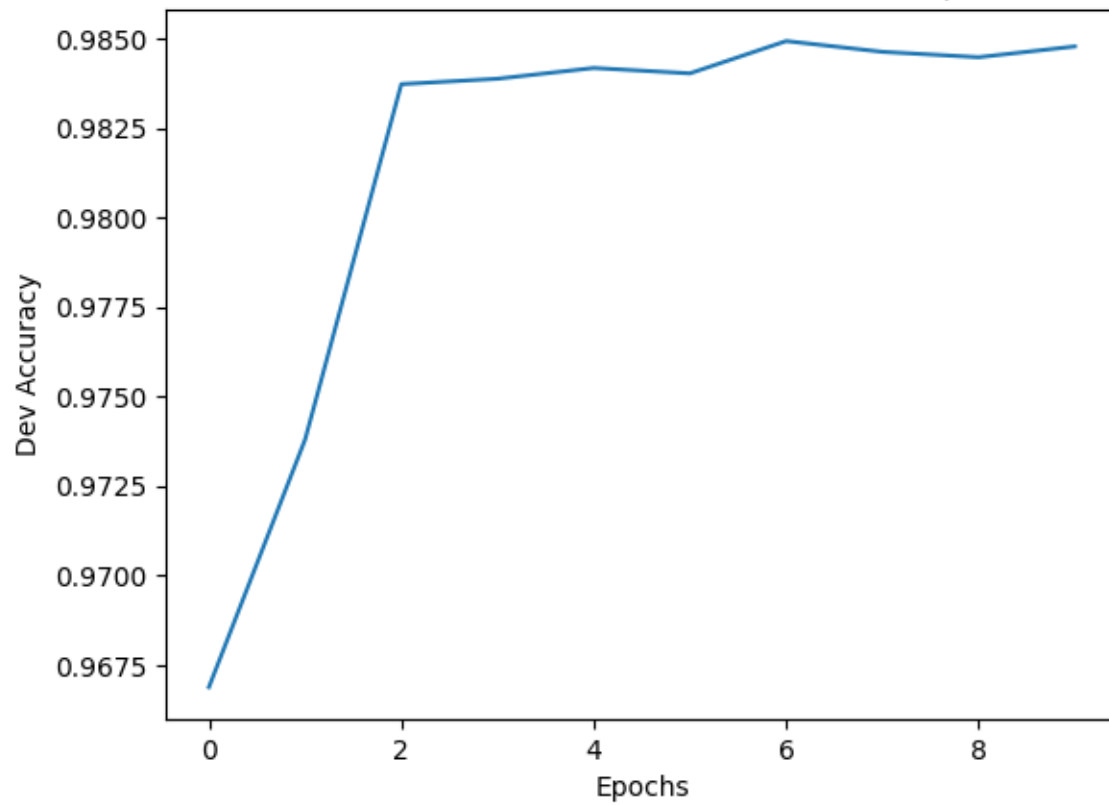Activation = tanh
Batch Size = 32
Epochs = 10
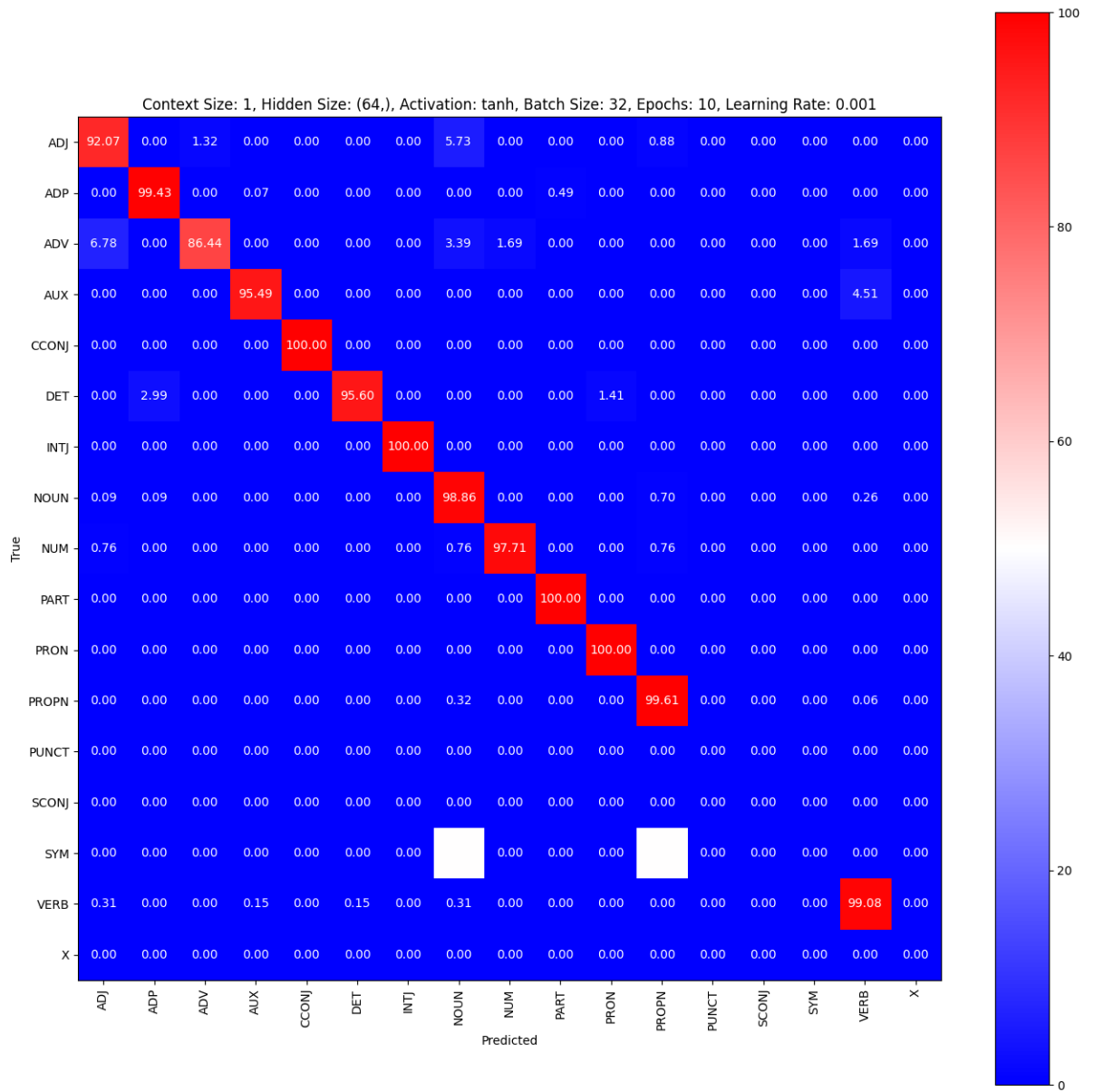Learning Rate = 0.001

Dev Accuracy vs Epochs

e: 1, Hidden Size: (64,), Activation: tanh, Batch Size: 32, Epochs: 10, Learning

Dev Confusion Matrix

Context Size: 1, Hidden Size: (64,), Activation: tanh, Batch Size: 32, Epochs: 10, Learning Rate: 0.001

Test Confusion Matrix

Context Size: 1, Hidden Size: (64,), Activation: tanh, Batch Size: 32, Epochs: 10, Learning Rate: 0.001

Hyperparameter set 2

Context Size = 1
Hidden Layer Sizes = [128]
Activation = tanh
Batch Size = 64
Epochs = 10
Learning Rate = 0.001

Dev Accuracy vs Epochs

e: 1, Hidden Size: (128,), Activation: tanh, Batch Size: 64, Epochs: 10, Learnir

Dev Confusion Matrix

Context Size: 1, Hidden Size: (128,), Activation: tanh, Batch Size: 64, Epochs: 10, Learning Rate: 0.001

Test Confusion Matrix

Hyperparameter set 2

Context Size = 1
Hidden Layer Sizes = [128]
Activation = tanh
Batch Size = 128
Epochs = 20
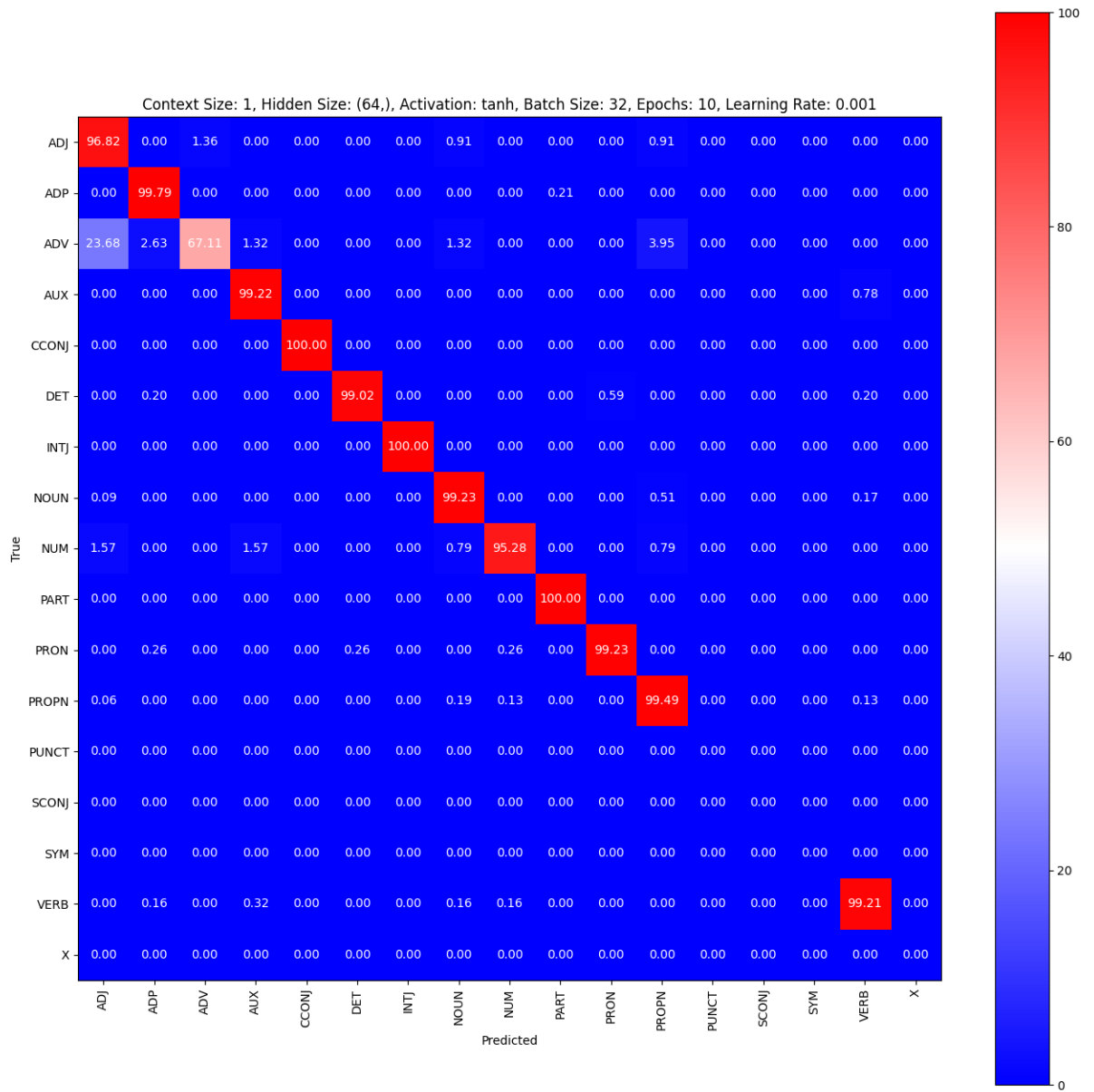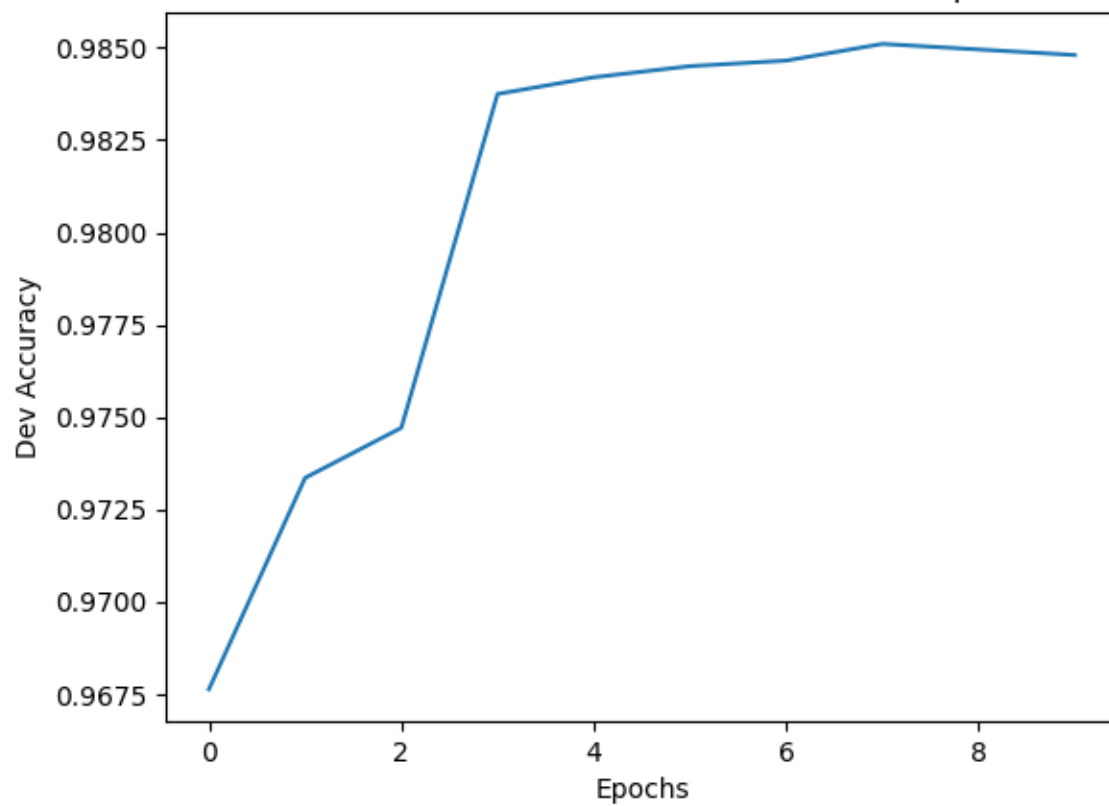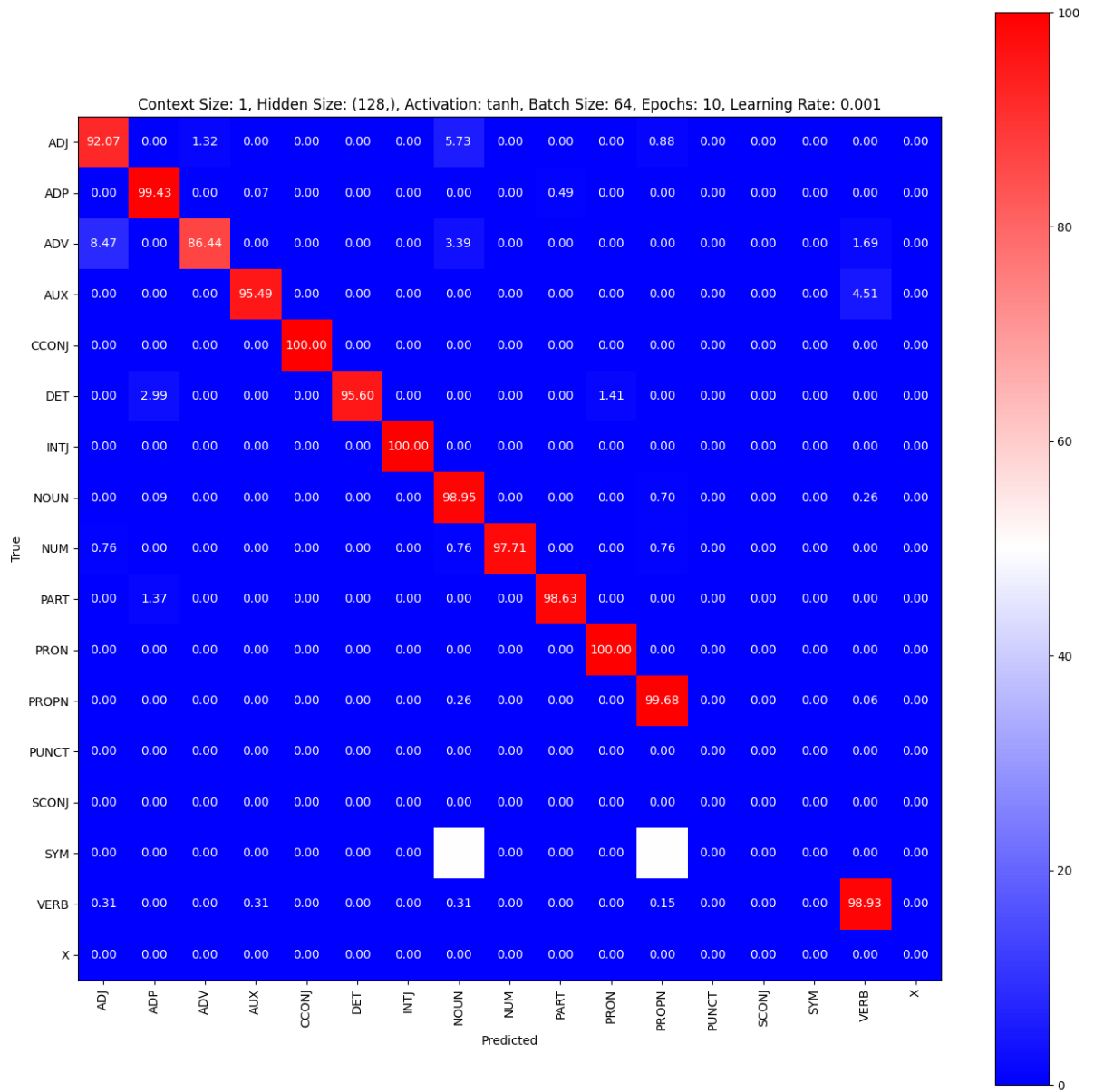Learning Rate = 0.001
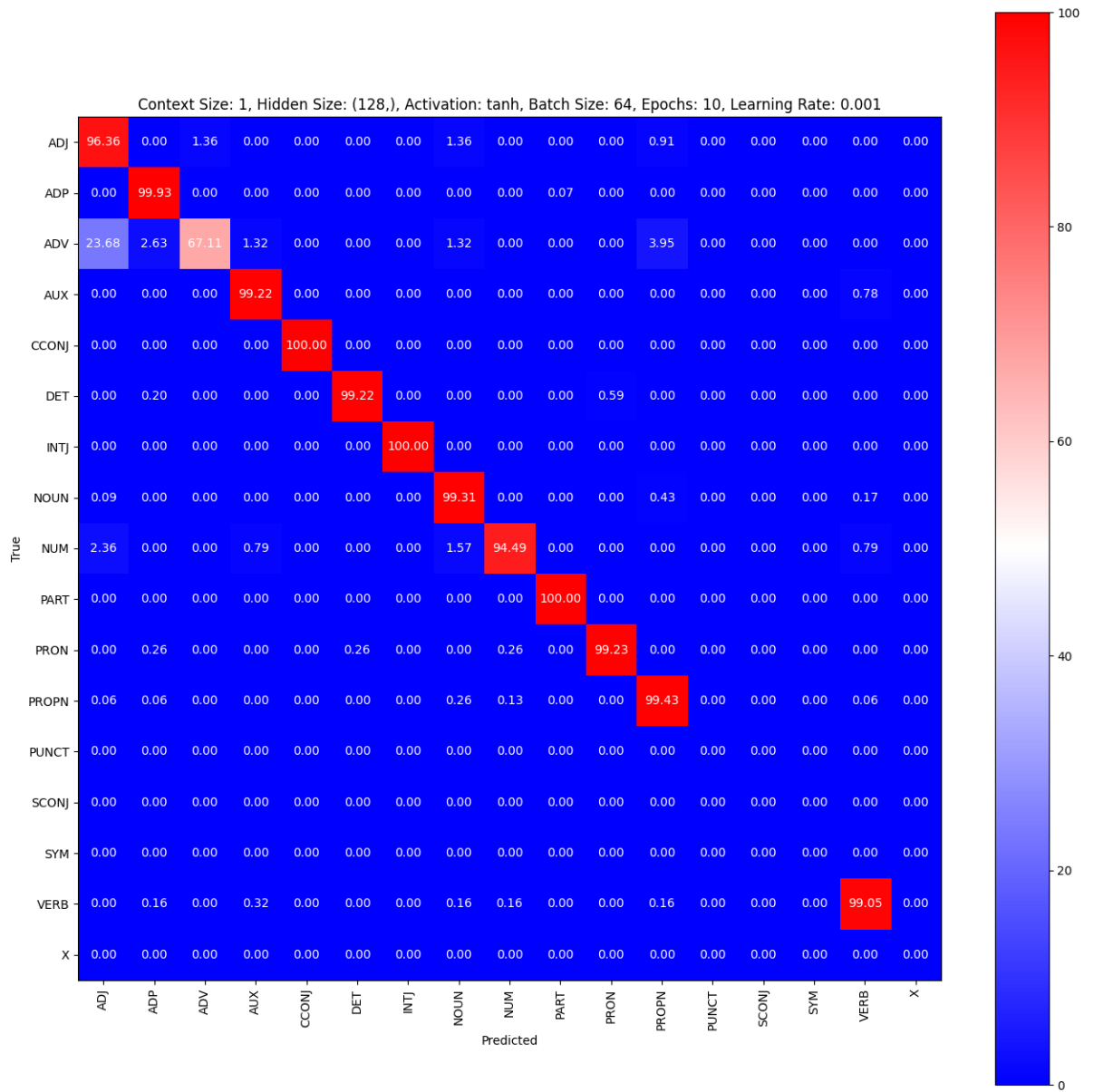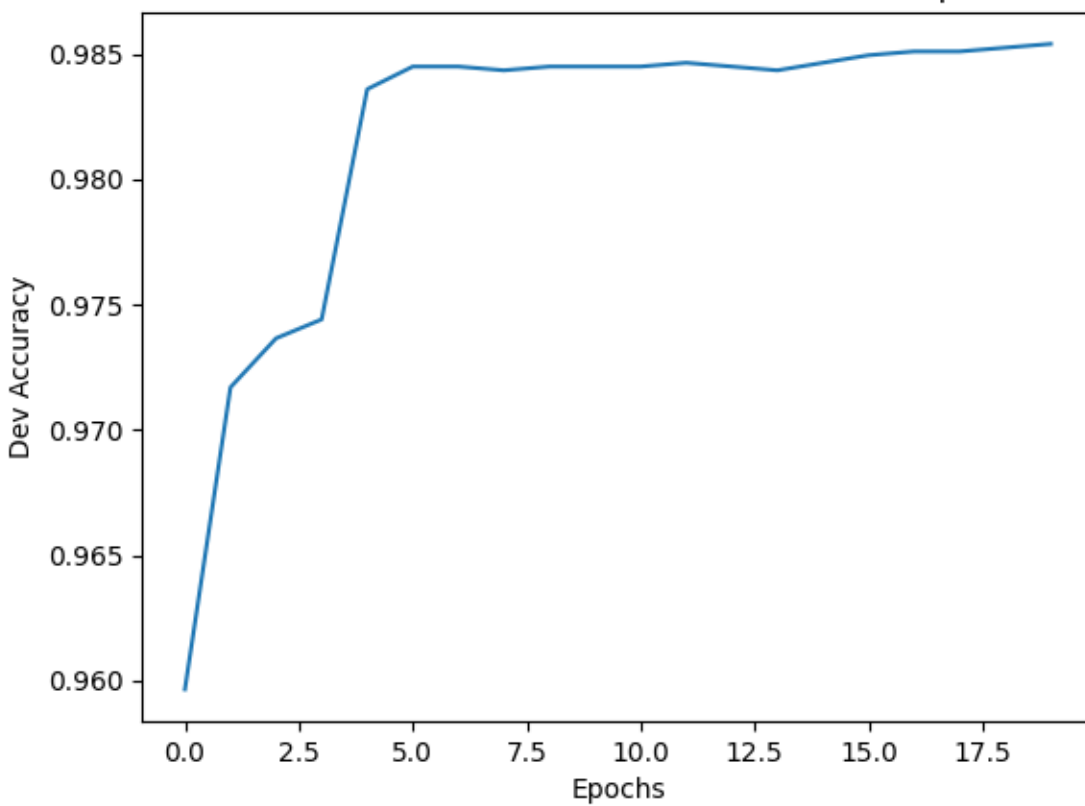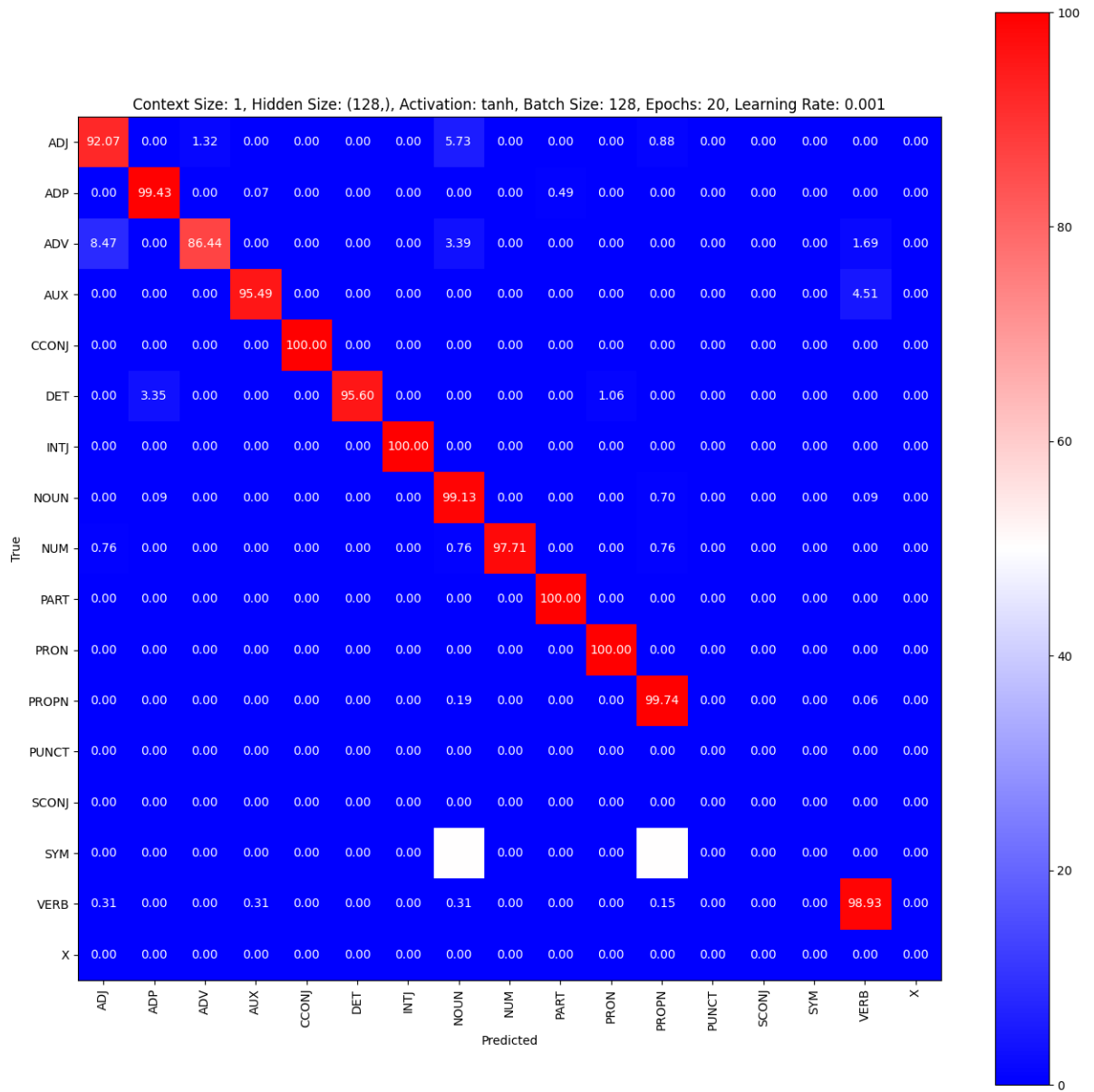
Dev Accuracy vs Epochs

: 1, Hidden Size: (128,), Activation: tanh, Batch Size: 128, Epochs: 20, Learni

Dev Confusion Matrix

Context Size: 1, Hidden Size: (128,), Activation: tanh, Batch Size: 128, Epochs: 20, Learning Rate: 0.001

Test Confusion Matrix

Context Size: 1, Hidden Size: (128,), Activation: tanh, Batch Size: 128, Epochs: 20, Learning Rate: 0.001

True \ Predicted	ADJ	ADP	ADV	AUX	CCONJ	DET	INTJ	NOUN	NUM	PART	PRON	PROPN	PUNCT	SCONJ	SYM	VERB	X
ADJ	96.36	0.00	1.36	0.00	0.00	0.00	0.00	1.36	0.00	0.00	0.00	0.91	0.00	0.00	0.00	0.00	0.00
ADP	0.00	99.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00
ADV	23.68	2.63	67.11	1.32	0.00	0.00	0.00	1.32	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00
AUX	0.00	0.00	0.00	99.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.00
CCONJ	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DET	0.00	0.20	0.00	0.00	0.00	99.02	0.00	0.00	0.00	0.00	0.78	0.00	0.00	0.00	0.00	0.00	0.00
INTJ	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOUN	0.09	0.00	0.00	0.00	0.00	0.00	0.00	99.23	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.17	0.00
NUM	2.36	0.00	0.00	1.57	0.00	0.00	0.00	1.57	94.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PART	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRON	0.00	0.26	0.00	0.00	0.00	0.51	0.00	0.00	0.26	0.00	98.98	0.00	0.00	0.00	0.00	0.00	0.00
PROPN	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.06	0.00	0.00	99.49	0.00	0.00	0.00	0.13	0.00
PUNCT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCONJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SYM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VERB	0.00	0.16	0.00	0.32	0.00	0.00	0.00	0.64	0.16	0.00	0.00	0.32	0.00	0.00	0.00	98.41	0.00
X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00