

Appendix Data:

Image A

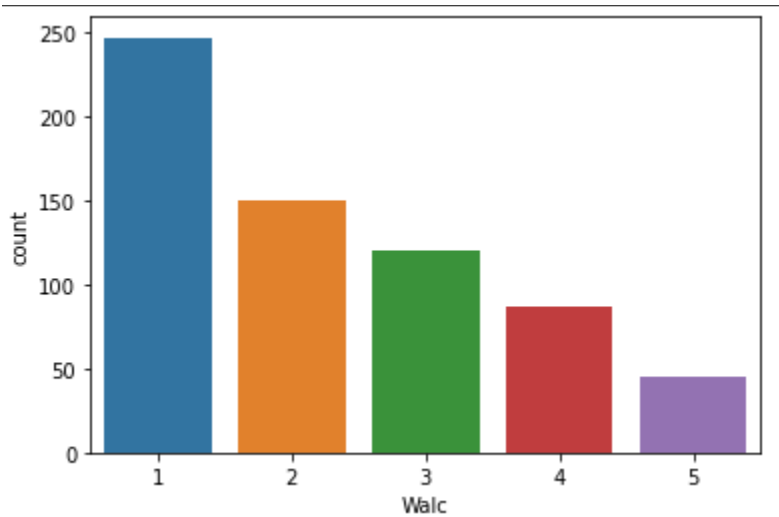
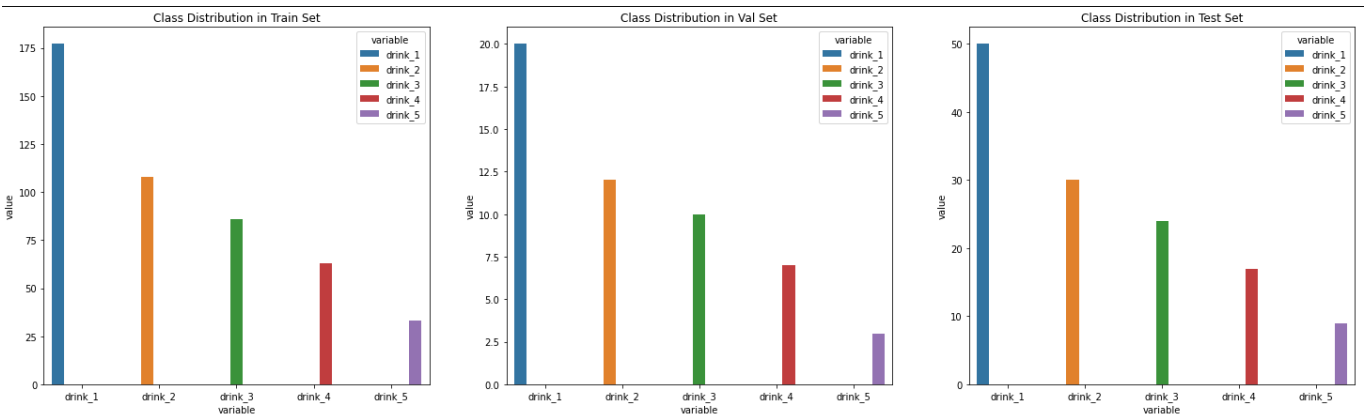


Image B

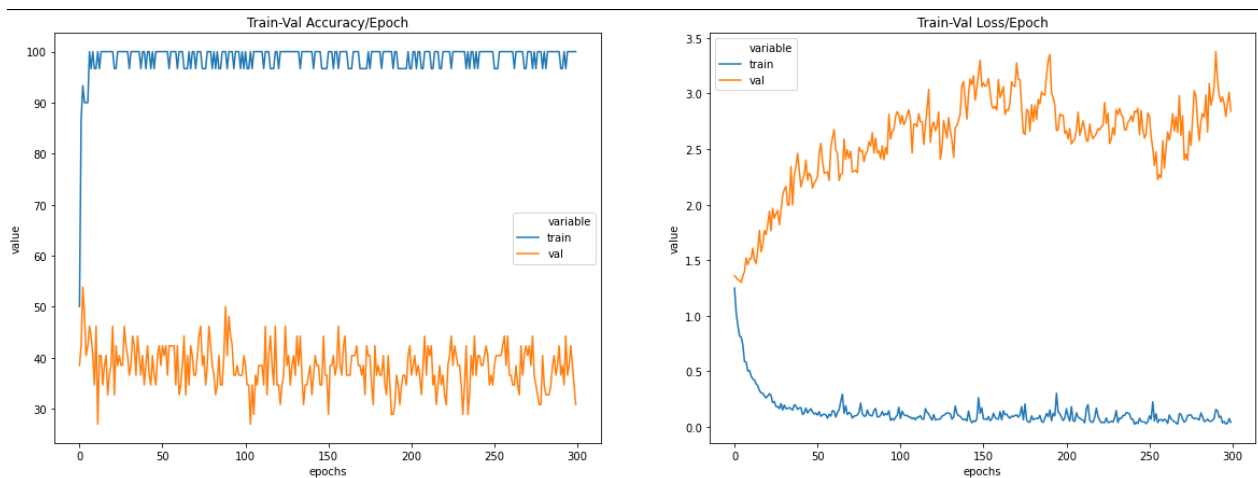


Appendix A

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	300
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 300: Train Loss: 0.04254 Val Loss: 2.83884 Train Acc: 100.000 Val Acc: 30.769
Test Accuracy	36%

Output table screen shot:

	precision	recall	f1-score	support
0	0.55	0.60	0.57	50
1	0.19	0.20	0.19	30
2	0.10	0.08	0.09	24
3	0.36	0.29	0.32	17
4	0.50	0.44	0.47	9
accuracy			0.36	130
macro avg	0.34	0.32	0.33	130
weighted avg	0.35	0.36	0.36	130



Appendix B

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 1.42068 Val Loss: 1.43115 Train Acc: 6.667 Val Acc: 38.462
Test Accuracy	38%

Output table screen shot:

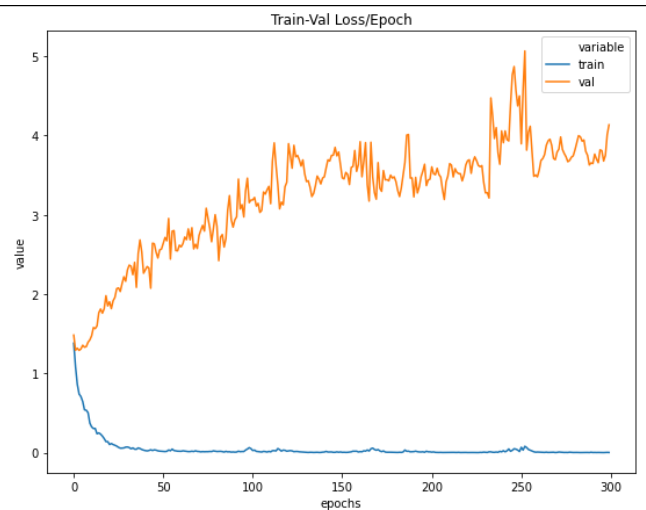
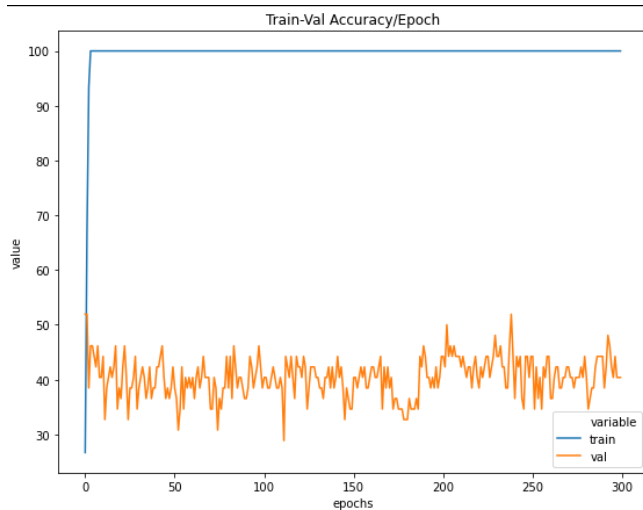
	precision	recall	f1-score	support
0	0.38	1.00	0.56	50
1	0.00	0.00	0.00	30
2	0.00	0.00	0.00	24
3	0.00	0.00	0.00	17
4	0.00	0.00	0.00	9
accuracy			0.38	130
macro avg	0.08	0.20	0.11	130
weighted avg	0.15	0.38	0.21	130

Appendix C

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	300
Batch Size	32
Learning Rate	0.0007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 300: Train Loss: 0.00193 Val Loss: 4.13492 Train Acc: 100.000 Val Acc: 40.385
Test Accuracy	40%

Output table screen shot:

	precision	recall	f1-score	support
0	0.50	0.70	0.58	50
1	0.30	0.23	0.26	30
2	0.11	0.08	0.10	24
3	0.38	0.29	0.33	17
4	0.50	0.33	0.40	9
accuracy			0.40	130
macro avg	0.36	0.33	0.34	130
weighted avg	0.37	0.40	0.37	130

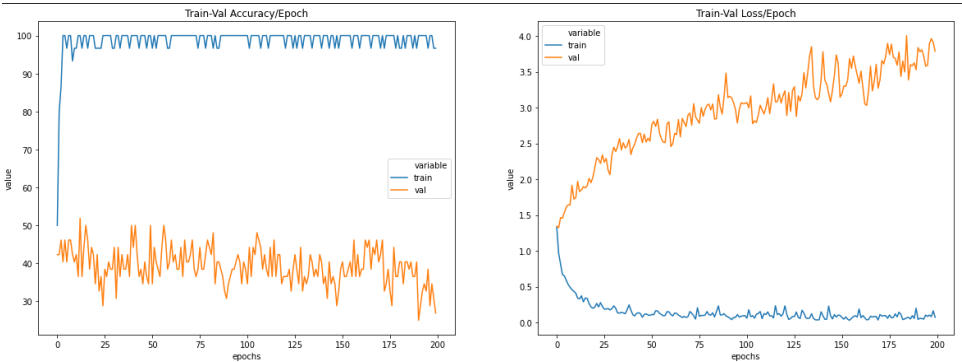


Appendix D

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (1024) => (512)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.07149 Val Loss: 3.78730 Train Acc: 96.667 Val Acc: 26.923
Test Accuracy	38%

Output table screen shot:

	precision	recall	f1-score	support
0	0.51	0.54	0.52	50
1	0.19	0.17	0.18	30
2	0.18	0.21	0.19	24
3	0.43	0.35	0.39	17
4	0.75	0.67	0.71	9
accuracy			0.38	130
macro avg	0.41	0.39	0.40	130
weighted avg	0.38	0.38	0.38	130



Appendix E

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256, Hidden Layer 2: 128
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.08759 Val Loss: 3.19291 Train Acc: 96.667 Val Acc: 30.769
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.53	0.72	0.61	50
1	0.32	0.30	0.31	30
2	0.15	0.08	0.11	24
3	0.29	0.24	0.26	17
4	0.43	0.33	0.38	9
accuracy			0.42	130
macro avg	0.34	0.33	0.33	130
weighted avg	0.37	0.42	0.39	130

Appendix F

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.00007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256, Hidden Layer 2: 128
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.08966 Val Loss: 1.90381 Train Acc: 100.000 Val Acc: 34.615
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.64	0.60	50
1	0.27	0.23	0.25	30
2	0.21	0.21	0.21	24
3	0.33	0.29	0.31	17
4	0.56	0.56	0.56	9
accuracy			0.42	130
macro avg	0.39	0.39	0.39	130
weighted avg	0.40	0.42	0.41	130

Appendix G

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	32
Learning Rate	0.0007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256, Hidden Layer 2: 128
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.00513 Val Loss: 3.05927 Train Acc: 100.000 Val Acc: 40.385
Test Accuracy	39%

Output table screen shot:

	precision	recall	f1-score	support
0	0.55	0.66	0.60	50
1	0.35	0.27	0.30	30
2	0.04	0.04	0.04	24
3	0.25	0.18	0.21	17
4	0.50	0.67	0.57	9
accuracy			0.39	130
macro avg	0.34	0.36	0.34	130
weighted avg	0.37	0.39	0.37	130

Appendix H

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.08633 Val Loss: 3.25121 Train Acc: 100.000 Val Acc: 34.615
Test Accuracy	38%

Output table screen shot:

	precision	recall	f1-score	support
0	0.56	0.54	0.55	50
1	0.28	0.30	0.29	30
2	0.13	0.12	0.13	24
3	0.35	0.35	0.35	17
4	0.50	0.56	0.53	9
accuracy			0.38	130
macro avg	0.37	0.37	0.37	130
weighted avg	0.39	0.38	0.39	130

Appendix I

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.19520 Val Loss: 3.64504 Train Acc: 96.667 Val Acc: 42.308
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.68	0.62	50
1	0.27	0.20	0.23	30
2	0.17	0.17	0.17	24
3	0.36	0.29	0.32	17
4	0.45	0.56	0.50	9
accuracy			0.42	130
macro avg	0.36	0.38	0.37	130
weighted avg	0.39	0.42	0.40	130

Appendix J

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (256) => (128) 2: (128) => (64)
Batch Normalization	Input Layer: 256, Hidden Layer 1: 128, Hidden Layer 2: 64
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.14128 Val Loss: 2.63619 Train Acc: 100.000 Val Acc: 34.615
Test Accuracy	39%

Output table screen shot:

	precision	recall	f1-score	support
0	0.55	0.64	0.59	50
1	0.22	0.17	0.19	30
2	0.24	0.25	0.24	24
3	0.29	0.24	0.26	17
4	0.40	0.44	0.42	9
accuracy			0.39	130
macro avg	0.34	0.35	0.34	130
weighted avg	0.37	0.39	0.38	130

Appendix K

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128) 3: (128) => (64)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256, Hidden Layer 2: 128, Hidden Layer 3: 64
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.11458 Val Loss: 2.97218 Train Acc: 100.000 Val Acc: 46.154
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.66	0.61	50
1	0.30	0.27	0.28	30
2	0.17	0.12	0.14	24
3	0.29	0.35	0.32	17
4	0.67	0.44	0.53	9
accuracy			0.42	130
macro avg	0.40	0.37	0.38	130
weighted avg	0.40	0.42	0.40	130

Appendix L

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (2048) => (1024) 2: (1024) => (512) 3: (512) => (256)
Batch Normalization	Input Layer: 2048, Hidden Layer 1: 1024, Hidden Layer 2: 512, Hidden Layer 3: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.04682 Val Loss: 3.26323 Train Acc: 100.000 Val Acc: 44.231
Test Accuracy	35%

Output table screen shot:

	precision	recall	f1-score	support
0	0.53	0.60	0.56	50
1	0.14	0.10	0.12	30
2	0.20	0.21	0.20	24
3	0.25	0.24	0.24	17
4	0.40	0.44	0.42	9
accuracy			0.35	130
macro avg	0.30	0.32	0.31	130
weighted avg	0.33	0.35	0.34	130

Appendix M

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	4
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128) 3: (128) => (64) 4: (64) => (32)
Batch Normalization	Input Layer: 2048, Hidden Layer 1: 1024, Hidden Layer 2: 512, Hidden Layer 3: 256, Hidden Layer 4: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.18398 Val Loss: 2.32281 Train Acc: 96.667 Val Acc: 40.385
Test Accuracy	40%

Output table screen shot:

	precision	recall	f1-score	support
0	0.60	0.62	0.61	50
1	0.26	0.17	0.20	30
2	0.21	0.25	0.23	24
3	0.27	0.35	0.31	17
4	0.44	0.44	0.44	9
accuracy			0.40	130
macro avg	0.36	0.37	0.36	130
weighted avg	0.40	0.40	0.39	130

Appendix N

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	4
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256) 3: (256) => (128) 4: (128) => (64)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256, Hidden Layer 3: 128, Hidden Layer 4: 64
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.11862 Val Loss: 2.52515 Train Acc: 100.000 Val Acc: 38.462
Test Accuracy	41%

Output table screen shot:

	precision	recall	f1-score	support
0	0.61	0.66	0.63	50
1	0.31	0.30	0.31	30
2	0.16	0.12	0.14	24
3	0.24	0.29	0.26	17
4	0.43	0.33	0.38	9
accuracy			0.41	130
macro avg	0.35	0.34	0.34	130
weighted avg	0.40	0.41	0.40	130

Appendix O

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	5
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128) 3: (128) => (64) 4: (64) => (32) 5: (32) => (16)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256, Hidden Layer 2: 128, Hidden Layer 3: 64, Hidden Layer 4: 32, Hidden Layer 5: 16
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.21391 Val Loss: 2.13607 Train Acc: 100.000 Val Acc: 34.615
Test Accuracy	36%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.56	0.57	50
1	0.19	0.17	0.18	30
2	0.18	0.21	0.19	24
3	0.22	0.24	0.23	17
4	0.62	0.56	0.59	9
accuracy			0.36	130
macro avg	0.36	0.35	0.35	130
weighted avg	0.37	0.36	0.36	130

Appendix P

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	5
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256) 3: (256) => (128) 4: (128) => (64) 5: (64) => (32)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256, Hidden Layer 3: 128, Hidden Layer 4: 64, Hidden Layer 5: 32
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.13348 Val Loss: 2.54188 Train Acc: 100.000 Val Acc: 36.538
Test Accuracy	39%

Output table screen shot:

	precision	recall	f1-score	support
0	0.53	0.64	0.58	50
1	0.33	0.30	0.32	30
2	0.13	0.12	0.13	24
3	0.31	0.29	0.30	17
4	0.50	0.22	0.31	9
accuracy			0.39	130
macro avg	0.36	0.32	0.33	130
weighted avg	0.38	0.39	0.38	130

Appendix Q

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	6
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128) 3: (128) => (64) 4: (64) => (32) 5: (32) => (16) 6: (16) => (8)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256, Hidden Layer 2: 128, Hidden Layer 3: 64, Hidden Layer 4: 32, Hidden Layer 5: 16, Hidden Layer 5: 8
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.37764 Val Loss: 2.12405 Train Acc: 96.667 Val Acc: 32.692
Test Accuracy	34%

Output table screen shot:

	precision	recall	f1-score	support
0	0.52	0.50	0.51	50
1	0.19	0.17	0.18	30
2	0.16	0.21	0.18	24
3	0.29	0.29	0.29	17
4	0.50	0.44	0.47	9
accuracy			0.34	130
macro avg	0.33	0.32	0.33	130
weighted avg	0.35	0.34	0.34	130

Appendix R

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	6
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256) 3: (256) => (128) 4: (128) => (64) 5: (64) => (32) 6: (32) => (16)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256, Hidden Layer 3: 128, Hidden Layer 4: 64, Hidden Layer 5: 32, Hidden Layer 5: 16
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.30472 Val Loss: 2.37141 Train Acc: 96.667 Val Acc: 38.462
Test Accuracy	38%

Output table screen shot:

	precision	recall	f1-score	support
0	0.55	0.58	0.56	50
1	0.22	0.20	0.21	30
2	0.22	0.21	0.21	24
3	0.21	0.24	0.22	17
4	0.62	0.56	0.59	9
accuracy			0.38	130
macro avg	0.36	0.36	0.36	130
weighted avg	0.37	0.38	0.37	130

Appendix S

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.007
Number of Hidden Layers	6
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256) 3: (256) => (128) 4: (128) => (64) 5: (64) => (32) 6: (32) => (16)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256, Hidden Layer 3: 128, Hidden Layer 4: 64, Hidden Layer 5: 32, Hidden Layer 5: 16
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 200: Train Loss: 0.33242 Val Loss: 2.11070 Train Acc: 96.667 Val Acc: 44.231
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.52	0.72	0.61	50
1	0.24	0.17	0.20	30
2	0.12	0.08	0.10	24
3	0.39	0.41	0.40	17
4	0.67	0.44	0.53	9
accuracy			0.42	130
macro avg	0.39	0.37	0.37	130
weighted avg	0.38	0.42	0.39	130

Appendix T

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	200
Batch Size	16
Learning Rate	0.007
Number of Hidden Layers	6
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256) 3: (256) => (128) 4: (128) => (64) 5: (64) => (32) 6: (32) => (16)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256, Hidden Layer 3: 128, Hidden Layer 4: 64, Hidden Layer 5: 32, Hidden Layer 5: 16
Early Stopping Patience	-
Drop Out Rate	0.2
Last Epoch Information	Epoch 200: Train Loss: 0.57295 Val Loss: 1.78169 Train Acc: 96.667 Val Acc: 44.231
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.53	0.64	0.58	50
1	0.29	0.30	0.30	30
2	0.17	0.08	0.11	24
3	0.41	0.53	0.46	17
4	0.60	0.33	0.43	9
accuracy			0.42	130
macro avg	0.40	0.38	0.38	130
weighted avg	0.40	0.42	0.40	130

Appendix U

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.01
Training Epochs	200
Batch Size	16
Learning Rate	0.007
Number of Hidden Layers	6
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256) 3: (256) => (128) 4: (128) => (64) 5: (64) => (32) 6: (32) => (16)
Batch Normalization	Input Layer: 1024, Hidden Layer 1: 512, Hidden Layer 2: 256, Hidden Layer 3: 128, Hidden Layer 4: 64, Hidden Layer 5: 32, Hidden Layer 5: 16
Early Stopping Patience	-
Drop Out Rate	0.2
Last Epoch Information	Epoch 200: Train Loss: 1.15199 Val Loss: 1.32413 Train Acc: 53.333 Val Acc: 44.231
Test Accuracy	46%

Output table screen shot:

	precision	recall	f1-score	support
0	0.62	0.66	0.64	50
1	0.39	0.40	0.39	30
2	0.25	0.29	0.27	24
3	0.44	0.47	0.46	17
4	0.00	0.00	0.00	9
accuracy			0.46	130
macro avg	0.34	0.36	0.35	130
weighted avg	0.43	0.46	0.45	130

Appendix V

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.01
Training Epochs	150
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128) 3: (128) => (64)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256, Hidden Layer 2: 128, Hidden Layer 3: 64
Early Stopping Patience	-
Drop Out Rate	0.2
Last Epoch Information	Epoch 150: Train Loss: 0.93559 Val Loss: 1.34033 Train Acc: 83.333 Val Acc: 46.154
Test Accuracy	42%

Output table screen shot:

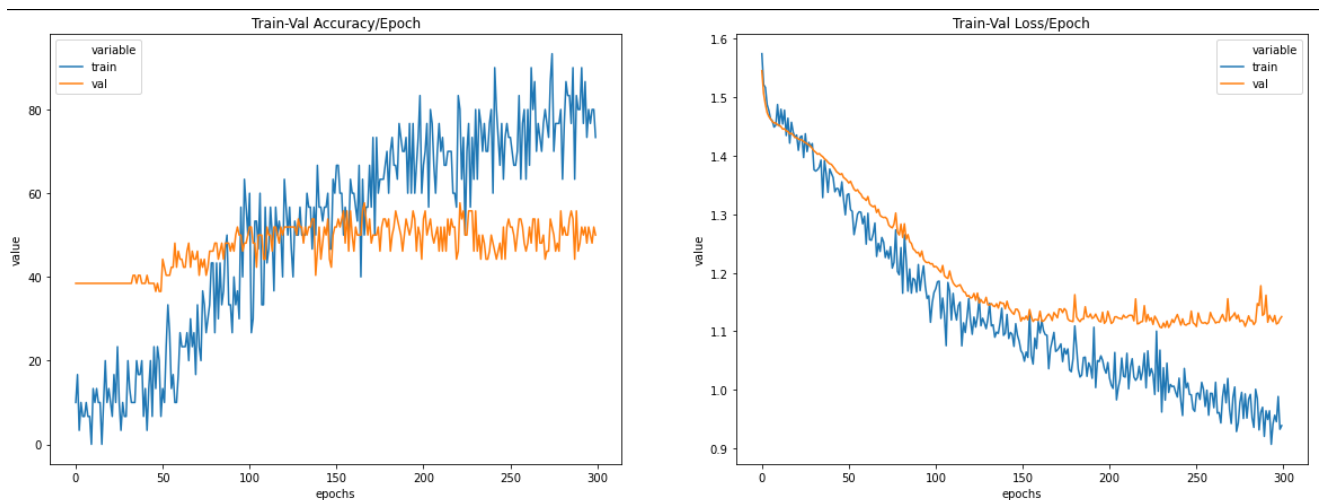
	precision	recall	f1-score	support
0	0.57	0.66	0.61	50
1	0.30	0.27	0.28	30
2	0.17	0.12	0.14	24
3	0.29	0.35	0.32	17
4	0.67	0.44	0.53	9
accuracy			0.42	130
macro avg	0.40	0.37	0.38	130
weighted avg	0.40	0.42	0.40	130

Appendix W

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.01
Training Epochs	300
Batch Size	16
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 300: Train Loss: 0.93910 Val Loss: 1.12516 Train Acc: 73.333 Val Acc: 50.000
Test Accuracy	45%

Output table screen shot:

	precision	recall	f1-score	support
0	0.60	0.72	0.65	50
1	0.25	0.20	0.22	30
2	0.27	0.38	0.32	24
3	0.50	0.12	0.19	17
4	0.67	0.67	0.67	9
accuracy			0.45	130
macro avg	0.46	0.42	0.41	130
weighted avg	0.45	0.45	0.43	130

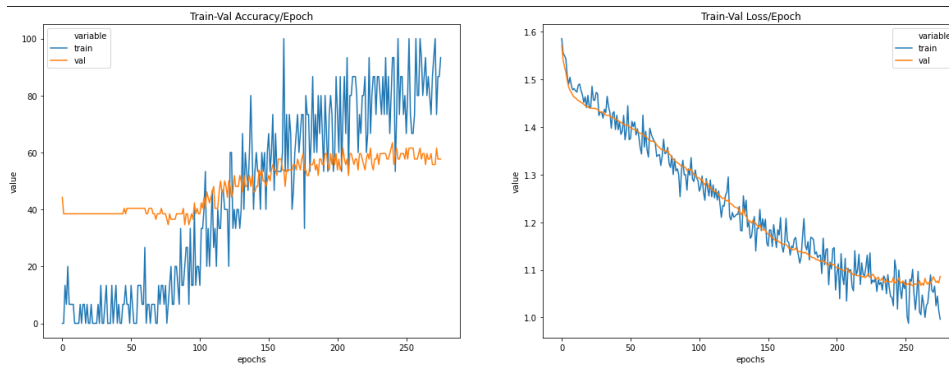


Appendix X

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.0001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 276: Train Loss: 0.99649 Val Loss: 1.08610 Train Acc: 93.333 Val Acc: 57.692
Test Accuracy	43%

Output table screen shot:

	precision	recall	f1-score	support
0	0.55	0.74	0.63	50
1	0.24	0.20	0.22	30
2	0.16	0.12	0.14	24
3	0.38	0.29	0.33	17
4	0.83	0.56	0.67	9
accuracy			0.43	130
macro avg	0.43	0.38	0.40	130
weighted avg	0.40	0.43	0.41	130



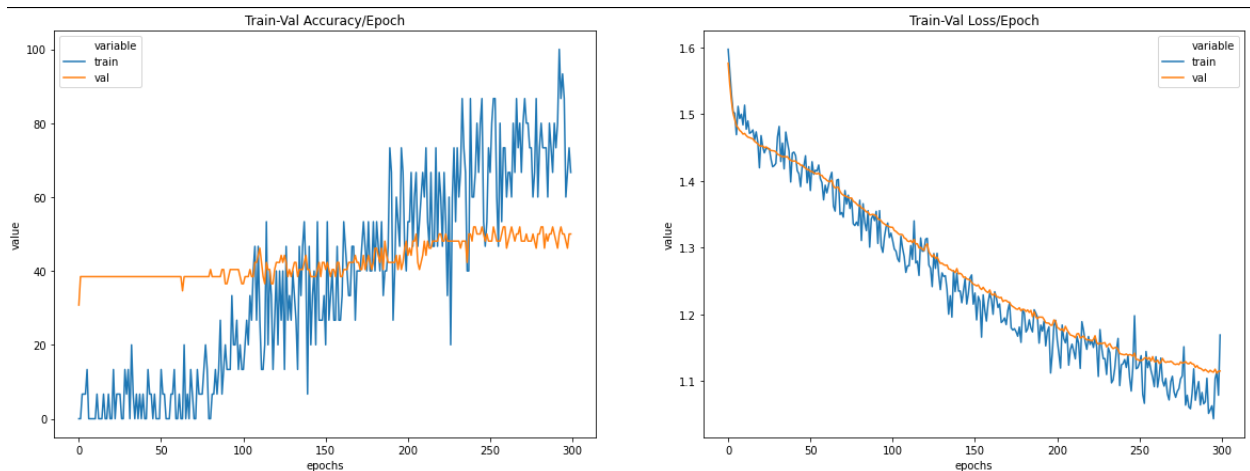
Appendix Y

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	300
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Drop Out Rate	0.1
Last Epoch Information	Epoch 300: Train Loss: 1.16879 Val Loss: 1.11471 Train Acc: 66.667 Val Acc: 50.000
Test Accuracy	48%

EPOCHS = 300

Output table screen shot:

	precision	recall	f1-score	support
0	0.54	0.88	0.67	50
1	0.35	0.20	0.26	30
2	0.20	0.08	0.12	24
3	0.44	0.41	0.42	17
4	0.80	0.44	0.57	9
accuracy			0.48	130
macro avg	0.47	0.40	0.41	130
weighted avg	0.44	0.48	0.43	130

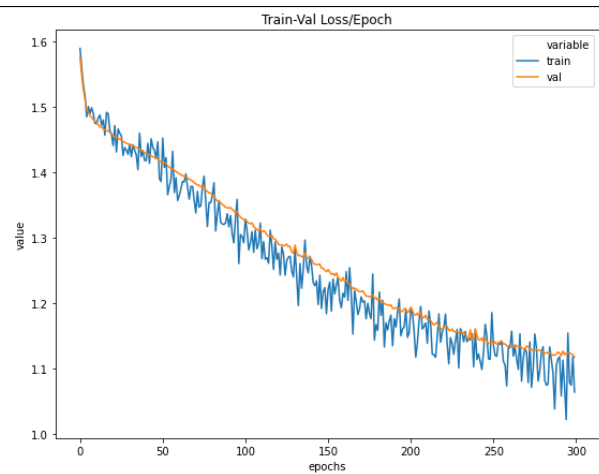
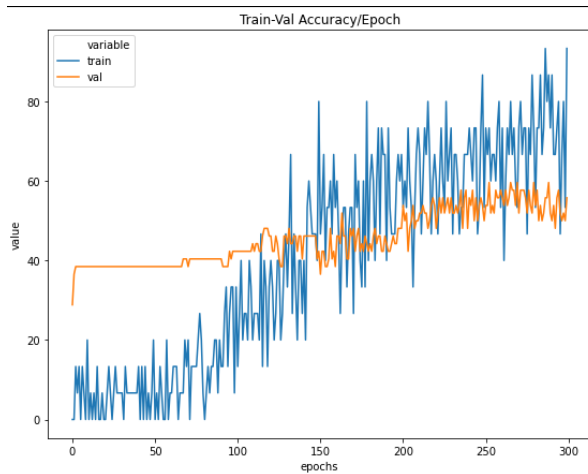


Appendix Z

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	300
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Drop Out Rate	0.2
Last Epoch Information	Epoch 300: Train Loss: 1.06376 Val Loss: 1.11708 Train Acc: 93.333 Val Acc: 55.769
Test Accuracy	47%

Output table screen shot:

	precision	recall	f1-score	support
0	0.54	0.86	0.67	50
1	0.19	0.10	0.13	30
2	0.23	0.12	0.16	24
3	0.44	0.41	0.42	17
4	0.83	0.56	0.67	9
accuracy			0.47	130
macro avg	0.45	0.41	0.41	130
weighted avg	0.41	0.47	0.42	130

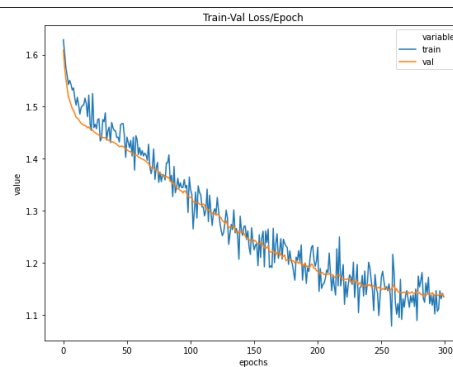
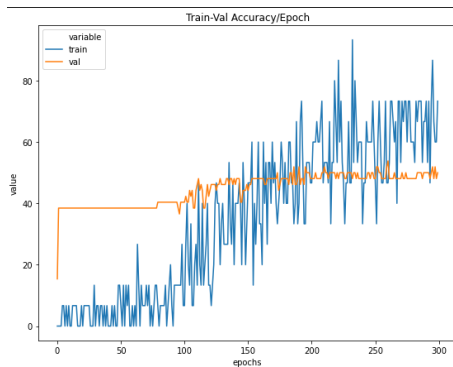


Appendix AA

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	300
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Drop Out Rate	0.3
Last Epoch Information	Epoch 300: Train Loss: 1.13414 Val Loss: 1.13454 Train Acc: 73.333 Val Acc: 50.000
Test Accuracy	48%

Output table screen shot:

	precision	recall	f1-score	support
0	0.56	0.88	0.68	50
1	0.14	0.07	0.09	30
2	0.23	0.12	0.16	24
3	0.41	0.41	0.41	17
4	0.86	0.67	0.75	9
accuracy			0.48	130
macro avg	0.44	0.43	0.42	130
weighted avg	0.40	0.48	0.42	130

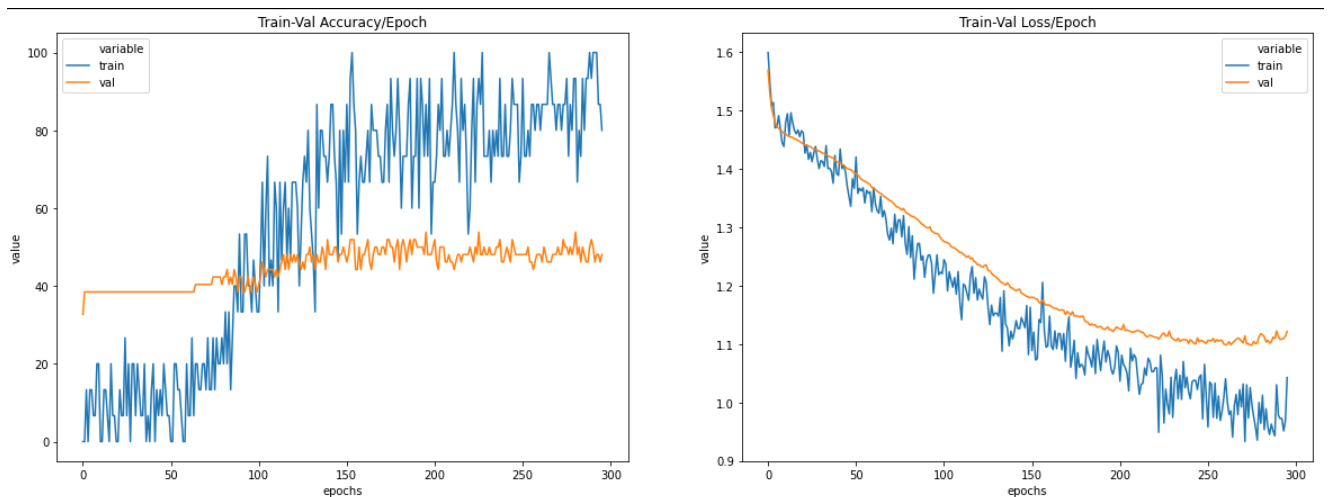


Appendix AB

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 296: Train Loss: 1.04244 Val Loss: 1.12140 Train Acc: 80.000 Val Acc: 48.077
Test Accuracy	52%

Output table screen shot:

	precision	recall	f1-score	support
0	0.59	0.86	0.70	50
1	0.53	0.27	0.36	30
2	0.30	0.33	0.31	24
3	0.38	0.18	0.24	17
4	0.86	0.67	0.75	9
accuracy			0.52	130
macro avg	0.53	0.46	0.47	130
weighted avg	0.51	0.52	0.49	130

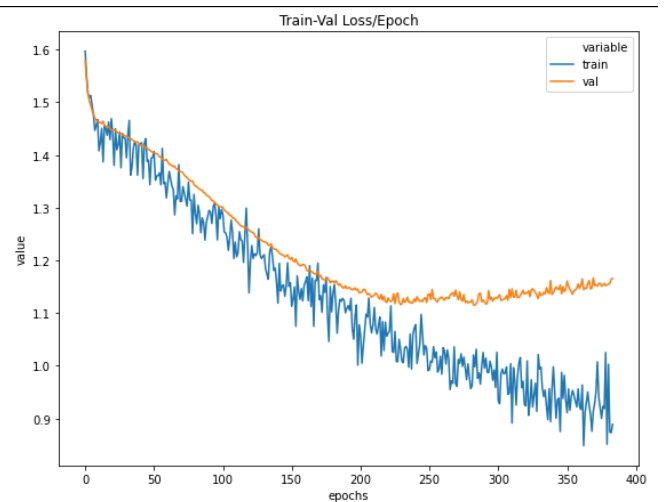
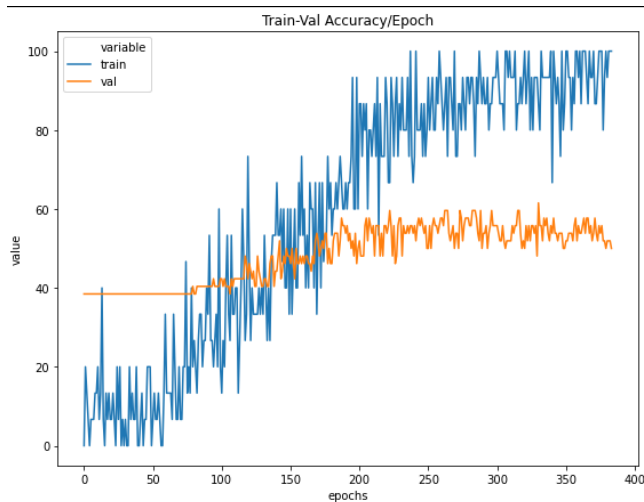


Appendix AC

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	100
Drop Out Rate	0.1
Last Epoch Information	Epoch 384: Train Loss: 0.88907 Val Loss: 1.16580 Train Acc: 100.000 Val Acc: 50.000
Test Accuracy	47%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.72	0.64	50
1	0.35	0.27	0.30	30
2	0.26	0.25	0.26	24
3	0.40	0.35	0.38	17
4	0.83	0.56	0.67	9
accuracy			0.47	130
macro avg	0.48	0.43	0.45	130
weighted avg	0.46	0.47	0.46	130

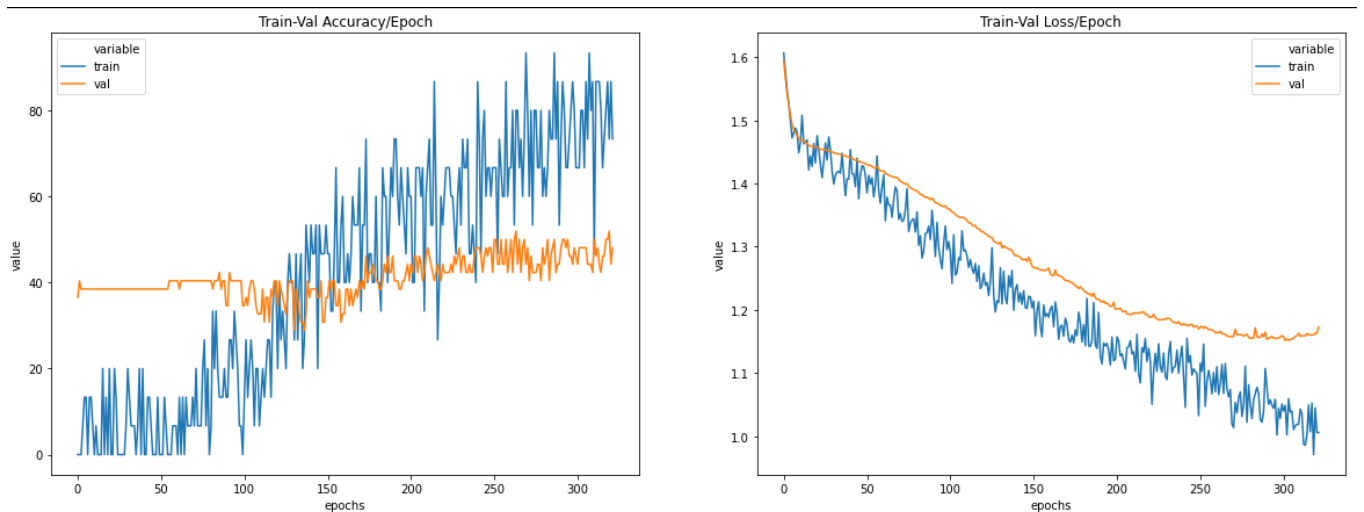


Appendix AD

Activation Function	LeakyReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 322: Train Loss: 1.00613 Val Loss: 1.17306 Train Acc: 73.333 Val Acc: 48.077
Test Accuracy	45%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.84	0.68	50
1	0.18	0.13	0.15	30
2	0.23	0.12	0.16	24
3	0.31	0.29	0.30	17
4	0.80	0.44	0.57	9
accuracy			0.45	130
macro avg	0.42	0.37	0.37	130
weighted avg	0.40	0.45	0.41	130

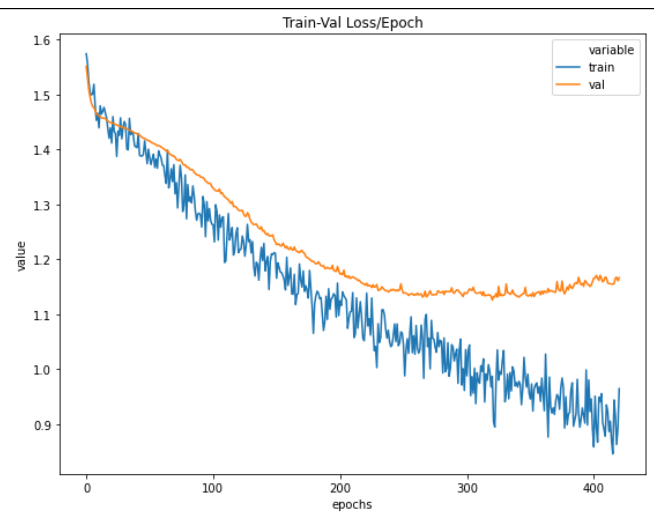
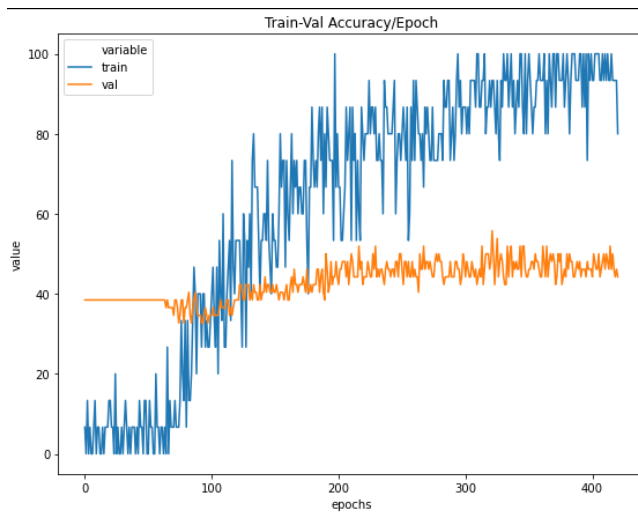


Appendix AE

Activation Function	LeakyReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	100
Drop Out Rate	0.1
Last Epoch Information	Epoch 421: Train Loss: 0.96482 Val Loss: 1.16665 Train Acc: 80.000 Val Acc: 44.231
Test Accuracy	48%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.78	0.66	50
1	0.37	0.23	0.29	30
2	0.25	0.29	0.27	24
3	0.57	0.24	0.33	17
4	0.75	0.67	0.71	9
accuracy			0.48	130
macro avg	0.50	0.44	0.45	130
weighted avg	0.48	0.48	0.46	130

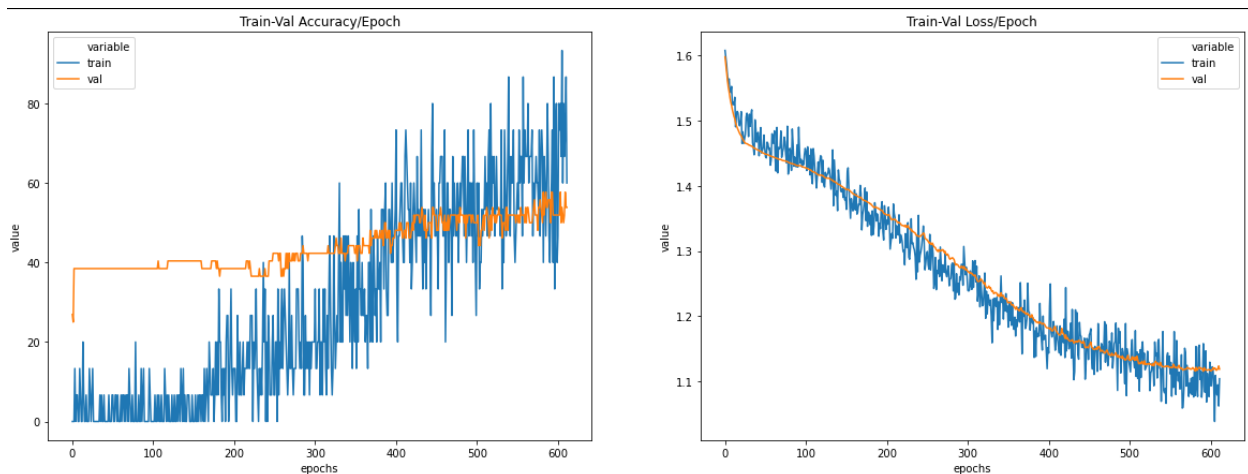


Appendix AF

Activation Function	Hardswish
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 612: Train Loss: 1.10404 Val Loss: 1.11871 Train Acc: 60.000 Val Acc: 53.846
Test Accuracy	50%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.84	0.68	50
1	0.27	0.20	0.23	30
2	0.31	0.21	0.25	24
3	0.60	0.35	0.44	17
4	0.75	0.67	0.71	9
accuracy			0.50	130
macro avg	0.50	0.45	0.46	130
weighted avg	0.47	0.50	0.47	130

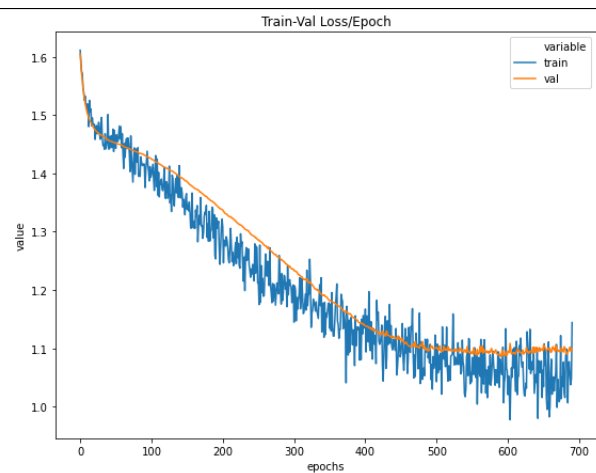
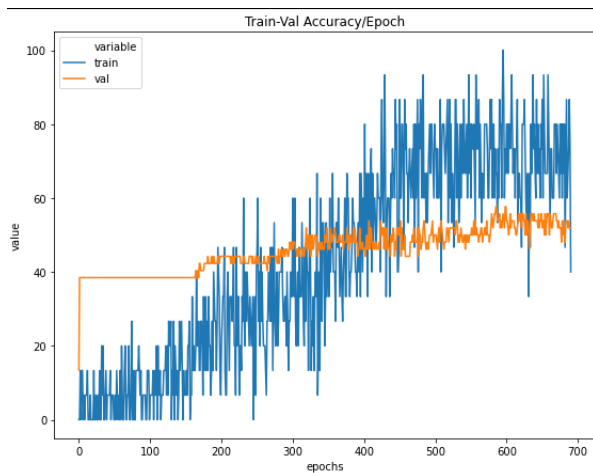


Appendix AG

Activation Function	Hardswish
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	100
Drop Out Rate	0.1
Last Epoch Information	Epoch 691: Train Loss: 1.14419 Val Loss: 1.09624 Train Acc: 40.000 Val Acc: 51.923
Test Accuracy	48%

Output table screen shot:

	precision	recall	f1-score	support
0	0.58	0.82	0.68	50
1	0.31	0.17	0.22	30
2	0.27	0.29	0.28	24
3	0.40	0.24	0.30	17
4	0.86	0.67	0.75	9
accuracy			0.48	130
macro avg	0.48	0.44	0.44	130
weighted avg	0.46	0.48	0.45	130

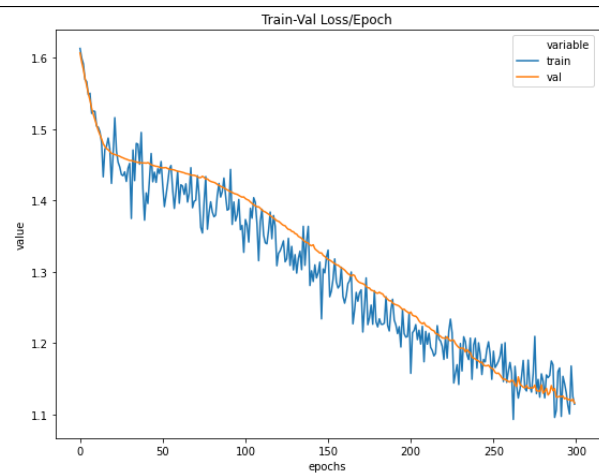
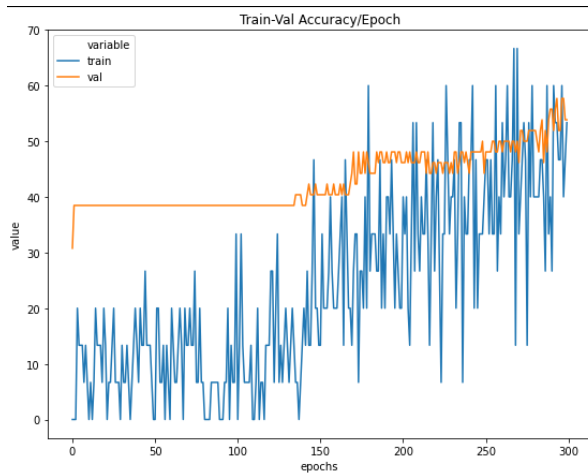


Appendix AH

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	300
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128)
Batch Normalization	-
Early Stopping Patience	-
Drop Out Rate	0.1
Last Epoch Information	Epoch 300: Train Loss: 1.11420 Val Loss: 1.11584 Train Acc: 53.333 Val Acc: 53.846
Test Accuracy	49%

Output table screen shot:

	precision	recall	f1-score	support
0	0.56	0.90	0.69	50
1	0.25	0.03	0.06	30
2	0.28	0.33	0.30	24
3	0.50	0.29	0.37	17
4	0.83	0.56	0.67	9
accuracy			0.49	130
macro avg	0.48	0.42	0.42	130
weighted avg	0.45	0.49	0.43	130

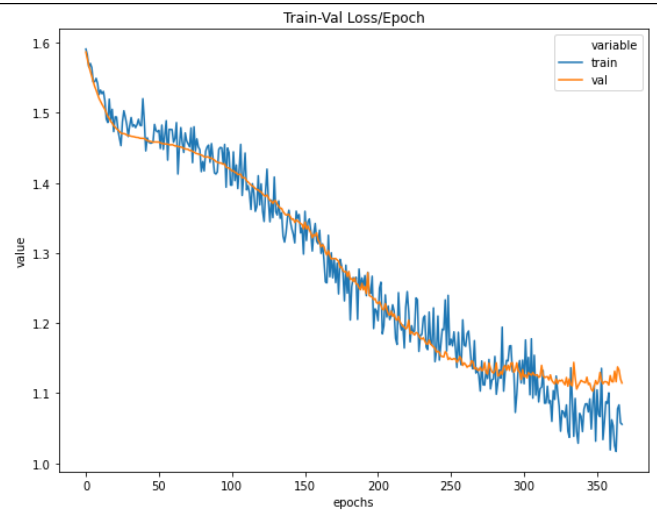
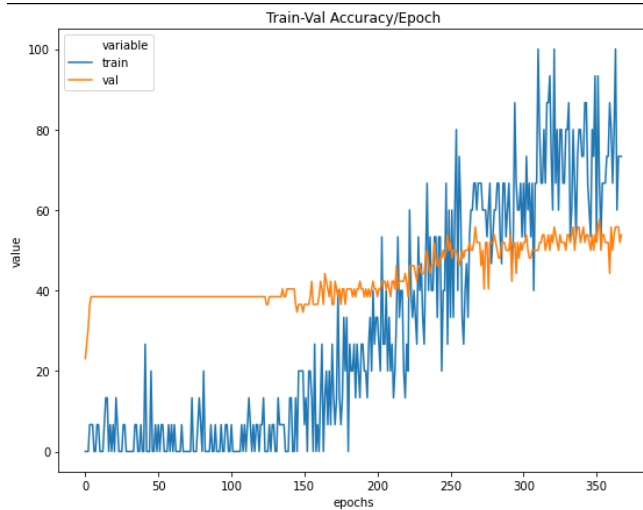


Appendix A1

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 368: Train Loss: 1.05560 Val Loss: 1.11449 Train Acc: 73.333 Val Acc: 53.846
Test Accuracy	48%

Output table screen shot:

	precision	recall	f1-score	support
0	0.59	0.78	0.67	50
1	0.36	0.33	0.34	30
2	0.22	0.17	0.19	24
3	0.46	0.35	0.40	17
4	0.80	0.44	0.57	9
accuracy			0.48	130
macro avg	0.49	0.42	0.44	130
weighted avg	0.47	0.48	0.47	130

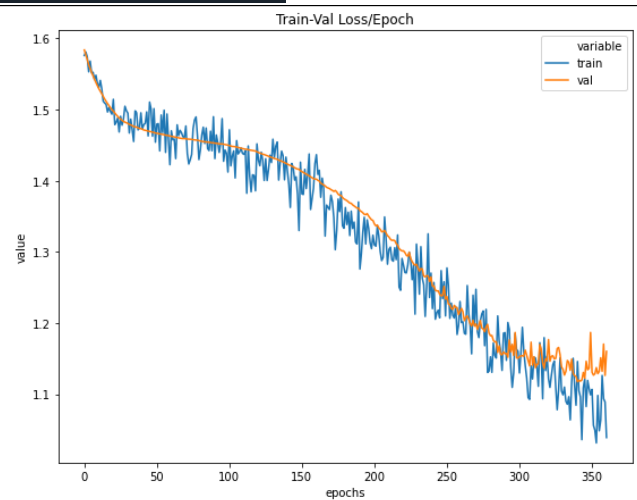
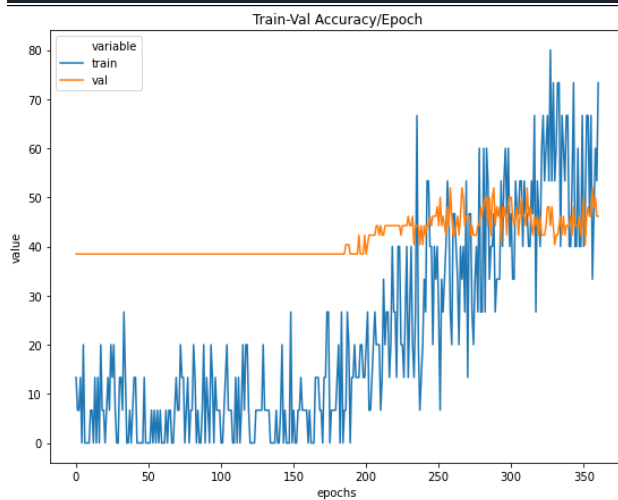


Appendix A1

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (512) => (256) 2: (256) => (128) 3: (128) => (64)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 361: Train Loss: 1.03909 Val Loss: 1.16008 Train Acc: 73.333 Val Acc: 46.154
Test Accuracy	50%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.88	0.69	50
1	0.46	0.20	0.28	30
2	0.27	0.17	0.21	24
3	0.44	0.65	0.52	17
4	0.00	0.00	0.00	9
accuracy			0.50	130
macro avg	0.35	0.38	0.34	130
weighted avg	0.43	0.50	0.44	130



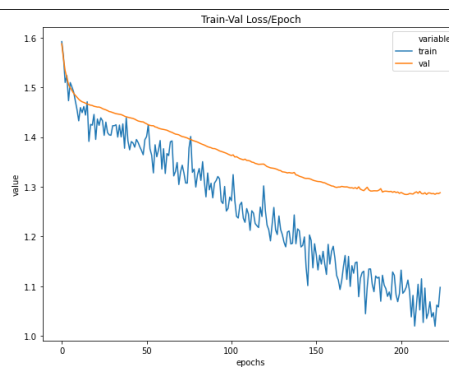
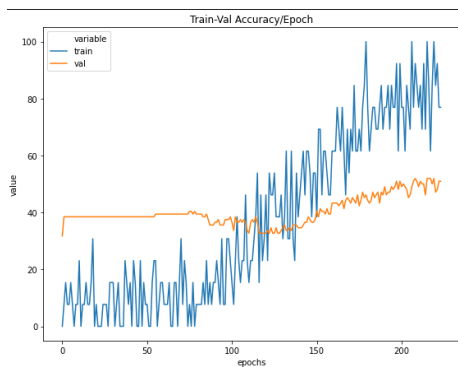
Appendix AK

Data Split: Train – 64%, Validation – 16% ,Test: 20%

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 224: Train Loss: 1.09780 Val Loss: 1.28799 Train Acc: 76.923 Val Acc: 50.962
Test Accuracy	44%

Output table screen shot:

	precision	recall	f1-score	support
0	0.59	0.80	0.68	50
1	0.21	0.20	0.21	30
2	0.08	0.04	0.06	24
3	0.38	0.35	0.36	17
4	0.67	0.44	0.53	9
accuracy			0.44	130
macro avg	0.39	0.37	0.37	130
weighted avg	0.39	0.44	0.40	130



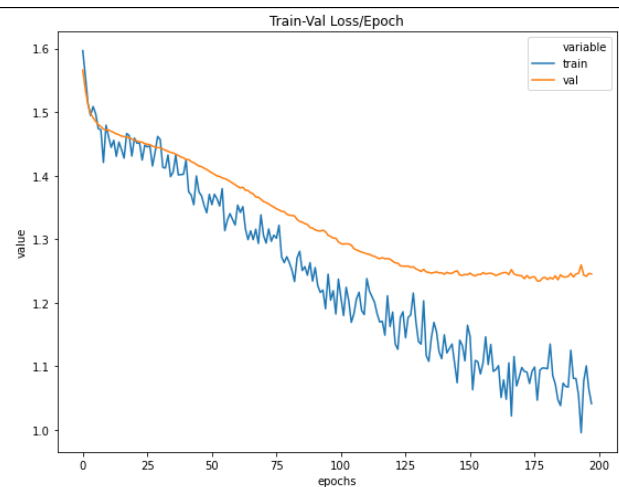
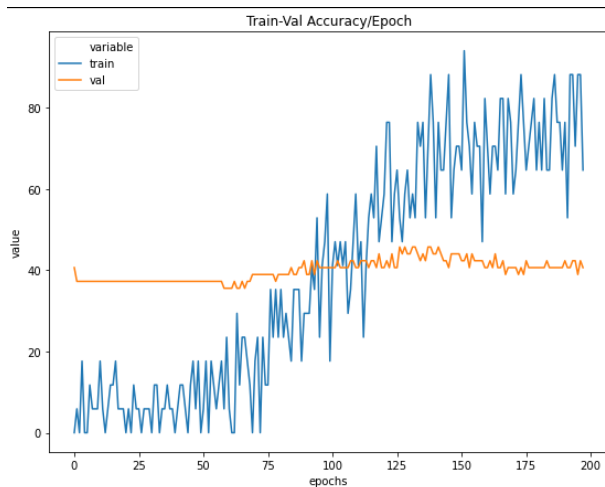
Appendix AL

Data Split: Train – 81%, Validation – 9% ,Test: 10%

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.001
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 198: Train Loss: 1.04097 Val Loss: 1.24517 Train Acc: 64.706 Val Acc: 40.678
Test Accuracy	40%

Output table screen shot:

	precision	recall	f1-score	support
0	0.55	0.84	0.67	25
1	0.11	0.07	0.08	15
2	0.20	0.17	0.18	12
3	0.14	0.11	0.12	9
4	1.00	0.25	0.40	4
accuracy			0.40	65
macro avg	0.40	0.29	0.29	65
weighted avg	0.36	0.40	0.35	65

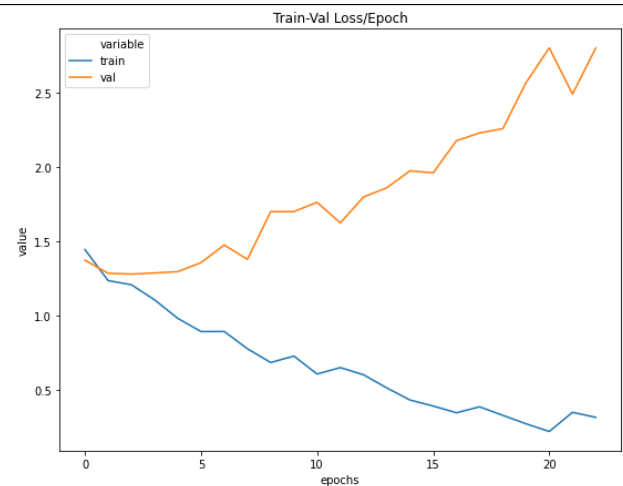
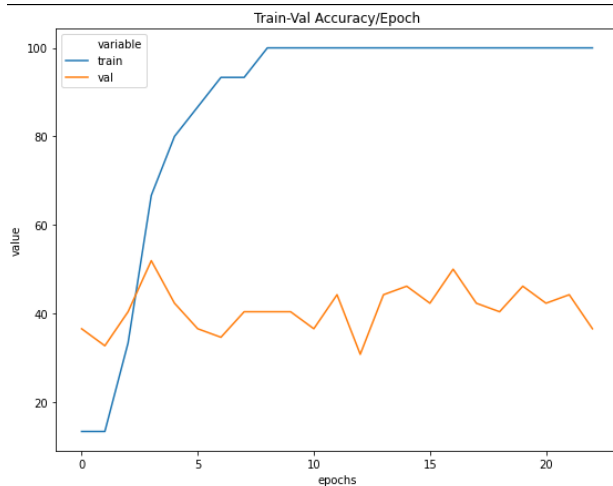


Appendix AM

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	-
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 023: Train Loss: 0.31766 Val Loss: 2.79718 Train Acc: 100.000 Val Acc: 36.538
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.48	0.90	0.63	50
1	0.60	0.10	0.17	30
2	0.17	0.04	0.07	24
3	0.24	0.35	0.29	17
4	0.00	0.00	0.00	9
accuracy			0.42	130
macro avg	0.30	0.28	0.23	130
weighted avg	0.38	0.42	0.33	130



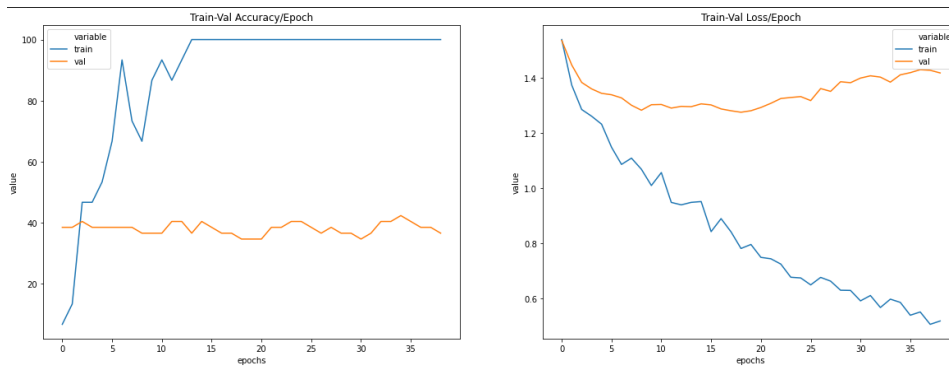
Appendix AN

Data Split: Train – 81%, Validation – 9% ,Test: 10%

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD, weight decay = 0.01
Training Epochs	10000
Batch Size	32
Learning Rate	0.007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256
Early Stopping Patience	20
Drop Out Rate	0.1
Last Epoch Information	Epoch 039: Train Loss: 0.51671 Val Loss: 1.41744 Train Acc: 100.000 Val Acc: 36.538
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.53	0.84	0.65	50
1	0.26	0.20	0.23	30
2	0.08	0.04	0.06	24
3	0.30	0.18	0.22	17
4	0.60	0.33	0.43	9
accuracy			0.42	130
macro avg	0.35	0.32	0.32	130
weighted avg	0.36	0.42	0.37	130



Appendix AO

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	300
Batch Size	16
Learning Rate	0.0007
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (512) => (256)
Batch Normalization	Input Layer: 512, Hidden Layer 1: 256
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 300: Train Loss: 0.0228 Val Loss: 3.5525 Train Acc: 96.667 Val Acc: 38.462
Test Accuracy	38%

Output table screen shot:

	precision	recall	f1-score	support
0	0.49	0.60	0.54	50
1	0.33	0.30	0.32	30
2	0.12	0.08	0.10	24
3	0.33	0.35	0.34	17
4	0.43	0.33	0.38	9
accuracy			0.38	130
macro avg	0.34	0.33	0.33	130
weighted avg	0.36	0.38	0.37	130

Appendix AP

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	58
Batch Size	16
Learning Rate	0.0038493557916637407
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (4589) => (2294)
Batch Normalization	Input Layer: 4589, Hidden Layer 1: 2294
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 058: Train Loss: 0.13564 Val Loss: 3.74467 Train Acc: 100.000 Val Acc: 38.462
Test Accuracy	37%

Output table screen shot:

	precision	recall	f1-score	support
0	0.51	0.54	0.52	50
1	0.26	0.20	0.23	30
2	0.22	0.21	0.21	24
3	0.29	0.41	0.34	17
4	0.43	0.33	0.38	9
accuracy			0.37	130
macro avg	0.34	0.34	0.34	130
weighted avg	0.36	0.37	0.36	130

Appendix AQ

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	300
Batch Size	16
Learning Rate	0.2
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (256) => (128) 2: (128) => (64) 3: (64) => (32)
Batch Normalization	Input Layer: 256, Hidden Layer 1: 128, Hidden Layer 2: 64, Hidden Layer 3: 32
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 300: Train Loss: 0.20646 Val Loss: 6.52117 Train Acc: 100.000 Val Acc: 28.846
Test Accuracy	39%

Output table screen shot:

	precision	recall	f1-score	support
0	0.62	0.66	0.64	50
1	0.38	0.20	0.26	30
2	0.11	0.17	0.13	24
3	0.29	0.35	0.32	17
4	0.50	0.22	0.31	9
accuracy			0.39	130
macro avg	0.38	0.32	0.33	130
weighted avg	0.42	0.39	0.39	130

Appendix AR

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	80
Batch Size	16
Learning Rate	0.19727524535520638
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (2962) => (1481) 2: (1481) => (740)
Batch Normalization	Input Layer: 2962, Hidden Layer 1: 1481, Hidden Layer 2: 740
Early Stopping Patience	-
Drop Out Rate	-
Last Epoch Information	Epoch 080: Train Loss: 0.92283 Val Loss: 1.61058 Train Acc: 63.333 Val Acc: 50.000
Test Accuracy	44%

Output table screen shot:

	precision	recall	f1-score	support
0	0.58	0.64	0.61	50
1	0.30	0.47	0.36	30
2	0.14	0.04	0.06	24
3	0.40	0.24	0.30	17
4	0.55	0.67	0.60	9
accuracy			0.44	130
macro avg	0.39	0.41	0.39	130
weighted avg	0.41	0.44	0.41	130

Appendix AS

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	76
Batch Size	105
Learning Rate	0.013920344480894973
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (6595) => (3298) 2: (3298) => (1649) 3: (1649) => (824)
Batch Normalization	Input Layer: 6595, Hidden Layer 1: 3298, Hidden Layer 2: 1649, Hidden Layer 3: 824
Early Stopping Patience	-
Weight Decay	0.8516583412890875
Drop Out Rate	0.2934481075639418
Last Epoch Information	Epoch 076: Train Loss: 1.01109 Val Loss: 1.36337 Train Acc: 100.000 Val Acc: 44.231
Test Accuracy	42%

Output table screen shot:

	precision	recall	f1-score	support
0	0.57	0.66	0.61	50
1	0.29	0.27	0.28	30
2	0.19	0.17	0.18	24
3	0.31	0.29	0.30	17
4	0.57	0.44	0.50	9
accuracy			0.42	130
macro avg	0.39	0.37	0.37	130
weighted avg	0.40	0.42	0.41	130

Appendix AT

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	Adam
Training Epochs	260
Batch Size	125
Learning Rate	0.00015054303711951883
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (4749) => (3298) 2: (3298) => (1649) 3: (1649) => (824)
Batch Normalization	Input Layer: 4749, Hidden Layer 1: 3298, Hidden Layer 2: 1649, Hidden Layer 3: 824
Early Stopping Patience	-
Weight Decay	0.35890558069944384
Drop Out Rate	0.036093945652246474
Last Epoch Information	Epoch 260: Train Loss: 0.12290 Val Loss: 1.51080 Train Acc: 100.000 Val Acc: 36.538
Test Accuracy	48%

Output table screen shot:

	precision	recall	f1-score	support
0	0.59	0.84	0.69	50
1	0.32	0.23	0.27	30
2	0.27	0.17	0.21	24
3	0.35	0.35	0.35	17
4	0.60	0.33	0.43	9
accuracy			0.48	130
macro avg	0.43	0.39	0.39	130
weighted avg	0.44	0.48	0.44	130

Appendix AU

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	52
Batch Size	74
Learning Rate	0.00948236203858607
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (6068) => (3034) 2: (3034) => (1517)
Batch Normalization	Input Layer: 6068, Hidden Layer 1: 3034, Hidden Layer 2: 1517
Early Stopping Patience	-
Weight Decay	0.16317779064178467
Drop Out Rate	0.1314163376390934
Last Epoch Information	Epoch 052: Train Loss: 0.38496 Val Loss: 1.38251 Train Acc: 100.000 Val Acc: 34.615
Test Accuracy	45%

Output table screen shot:

	precision	recall	f1-score	support
0	0.63	0.72	0.67	50
1	0.30	0.23	0.26	30
2	0.32	0.33	0.33	24
3	0.24	0.24	0.24	17
4	0.50	0.44	0.47	9
accuracy			0.45	130
macro avg	0.40	0.39	0.39	130
weighted avg	0.44	0.45	0.44	130

Appendix AV

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	135
Batch Size	19
Learning Rate	0.007146503748942547
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (7877) => (3939)
Batch Normalization	Input Layer: 7877, Hidden Layer 1: 3939
Early Stopping Patience	-
Weight Decay	0.4278550745917246
Drop Out Rate	0.22873144020458944
Last Epoch Information	Epoch 135: Train Loss: 0.69038 Val Loss: 1.32140 Train Acc: 100.000 Val Acc: 48.077
Test Accuracy	43%

Output table screen shot:

	precision	recall	f1-score	support
0	0.56	0.70	0.62	50
1	0.34	0.33	0.34	30
2	0.12	0.08	0.10	24
3	0.38	0.35	0.36	17
4	0.50	0.33	0.40	9
accuracy			0.43	130
macro avg	0.38	0.36	0.36	130
weighted avg	0.40	0.43	0.41	130

Appendix AW

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	8538
Batch Size	54
Learning Rate	0.0007539524474668675
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (8538) => (4269) 2: (4269) => (2134)
Batch Normalization	Input Layer: 8538, Hidden Layer 1: 4269, Hidden Layer 2: 2134
Early Stopping Patience	0.5340685918653861
Weight Decay	0.6080295007545474
Drop Out Rate	0.7786589029651306
Last Epoch Information	Epoch 052: Train Loss: 0.38496 Val Loss: 1.38251 Train Acc: 100.000 Val Acc: 34.615
Test Accuracy	45%

Appendix AX

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	203
Batch Size	21
Learning Rate	0.019473904989422124
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (2624) => (1312)
Batch Normalization	Input Layer: 2624, Hidden Layer 1: 1312
Early Stopping Patience	20
Weight Decay	0.001
Drop Out Rate	0.46674072359143415
Last Epoch Information	Epoch 066: Train Loss: 0.90298 Val Loss: 1.23355 Train Acc: 86.957 Val Acc: 51.923
Test Accuracy	49%

Output table screen shot:

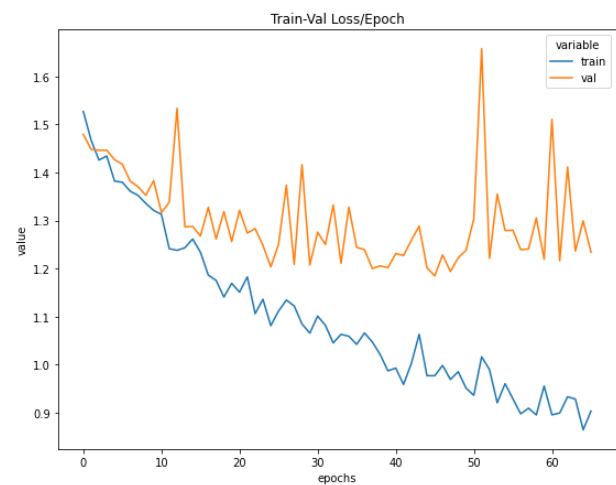
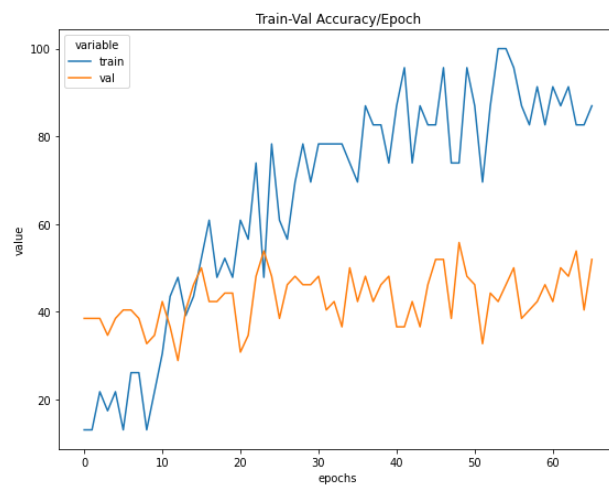
```

precision    recall  f1-score   support

0           0.56        0.96        0.71         50
1           0.30        0.10        0.15         30
2           0.21        0.17        0.19         24
3           0.38        0.18        0.24         17
4           0.75        0.67        0.71          9

accuracy          0.49        130
macro avg         0.44        0.41        0.40        130
weighted avg      0.43        0.49        0.42        130

```



Appendix AZ

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	157
Batch Size	63
Learning Rate	0.00022009709124994273
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (3798) => (1899)
Batch Normalization	Input Layer: 3798, Hidden Layer 1: 1899
Early Stopping Patience	0.8134192433402521
Weight Decay	0.6086040733570699
Drop Out Rate	0.7594671450530076
Last Epoch Information	Epoch 157: Train Loss: 1.41896 Val Loss: 1.44941 Train Acc: 0.000 Val Acc: 38.46
Test Accuracy	38%

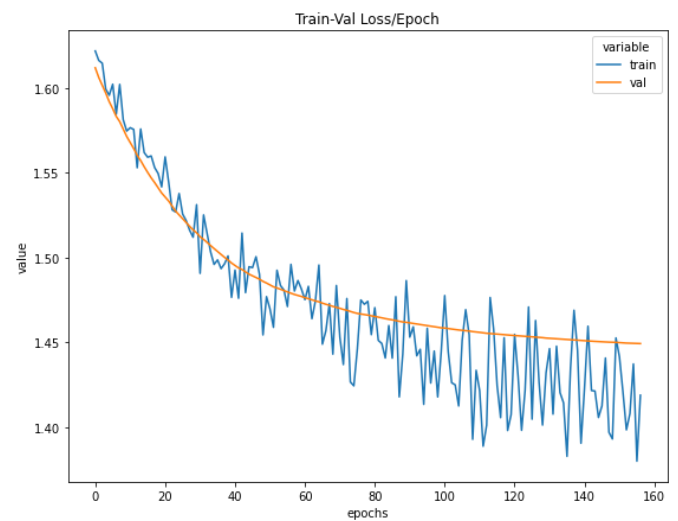
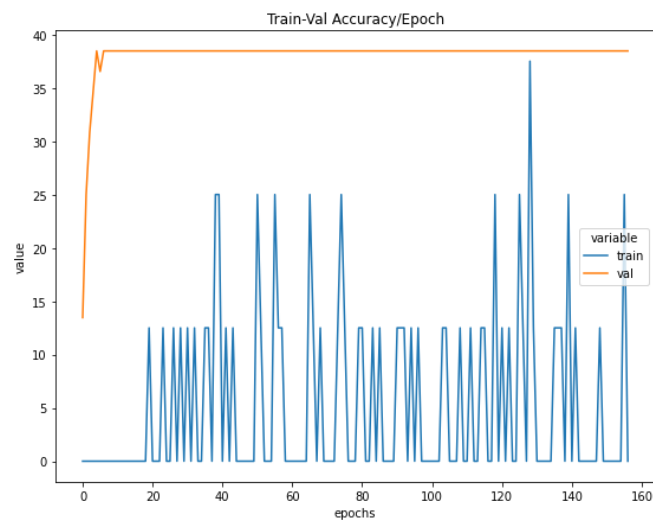
Output table screen shot:

```

0      0.38      1.00      0.56      50
1      0.00      0.00      0.00      30
2      0.00      0.00      0.00      24
3      0.00      0.00      0.00      17
4      0.00      0.00      0.00      9

accuracy      0.38      130
macro avg     0.08      0.20      0.11      130
weighted avg  0.15      0.38      0.21      130

```



Appendix BA

Activation Function	Hardswish
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	8895
Batch Size	87
Learning Rate	0.0006327001948782599
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (2639) => (1319)
Batch Normalization	Input Layer: 2639, Hidden Layer 1: 1319
Early Stopping Patience	-
Weight Decay	0.4264997841858085
Drop Out Rate	0.42359007485630035
Last Epoch Information	Epoch 8895: Train Loss: 1.54611 Val Loss: 1.53685 Train Acc: 0.000 Val Acc: 38.462
Test Accuracy	38%

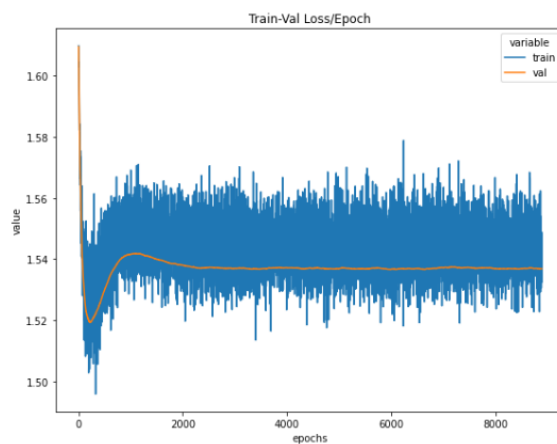
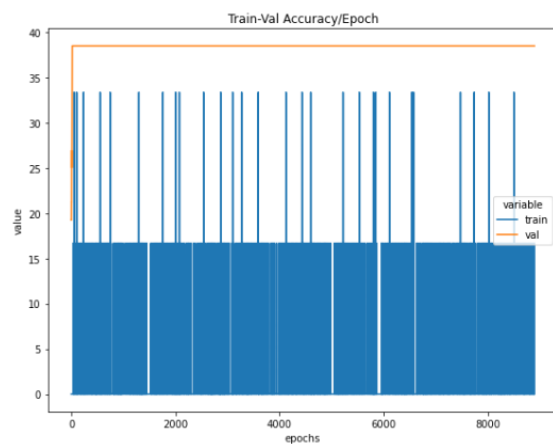
Output table screen shot:

```

0      0.38      1.00      0.56      50
1      0.00      0.00      0.00      30
2      0.00      0.00      0.00      24
3      0.00      0.00      0.00      17
4      0.00      0.00      0.00      9

accuracy          0.38      130
macro avg        0.08      0.20      0.11      130
weighted avg     0.15      0.38      0.21      130

```



Appendix BB

Activation Function	LeakyReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	4066
Batch Size	20
Learning Rate	0.378637059648244
Number of Hidden Layers	1
Hidden Layers: Inputs and Outputs	1: (2784) => (1392)
Batch Normalization	-
Early Stopping Patience	-
Weight Decay	0.014236697245389222
Drop Out Rate	0.030501206666231157
Last Epoch Information	Epoch 4066: Train Loss: 1.22724 Val Loss: 1.30061 Train Acc: 29.167 Val Acc: 44.231
Test Accuracy	43%

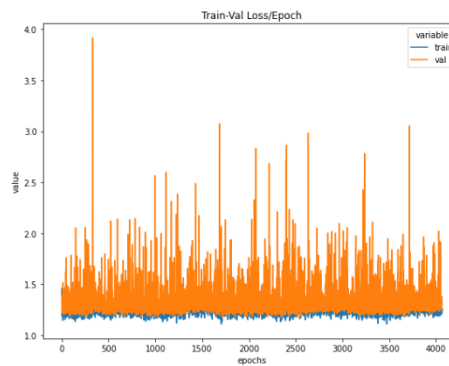
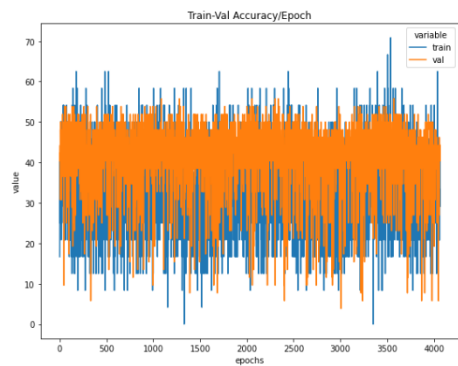
Output table screen shot:

```

0      0.42      1.00      0.60      50
1      0.20      0.03      0.06      30
2      0.00      0.00      0.00      24
3      0.00      0.00      0.00      17
4      0.71      0.56      0.63      9

accuracy      0.43      130
macro avg     0.27      0.32      0.26      130
weighted avg  0.26      0.43      0.29      130

```



Appendix BC

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	500
Batch Size	36
Learning Rate	0.0045
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (2048) => (1024) 2: (1024) => (512) 3: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Weight Decay	0.01
Drop Out Rate	0.15
Last Epoch Information	-
Test Accuracy	51%

Output table screen shot:

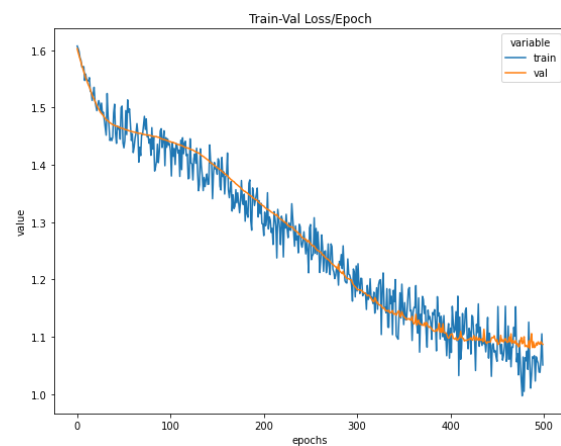
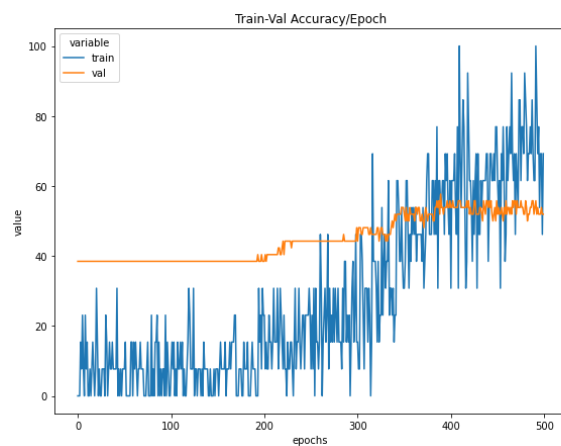
```

precision    recall  f1-score   support

0           0.59       0.82       0.68         50
1           0.29       0.13       0.18         30
2           0.33       0.25       0.29         24
3           0.45       0.59       0.51         17
4           0.83       0.56       0.67          9

accuracy                    0.51        130
macro avg           0.50       0.47       0.47        130
weighted avg        0.47       0.51       0.47        130

```



Appendix BD

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	800
Batch Size	36
Learning Rate	0.0055
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (2048) => (1024) 2: (1024) => (512) 3: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Weight Decay	0.01
Drop Out Rate	0.15
Last Epoch Information	Epoch 800: Train Loss: 0.63405 Val Loss: 1.33776 Train Acc: 100.000 Val Acc: 34.615
Test Accuracy	44%

Output table screen shot:

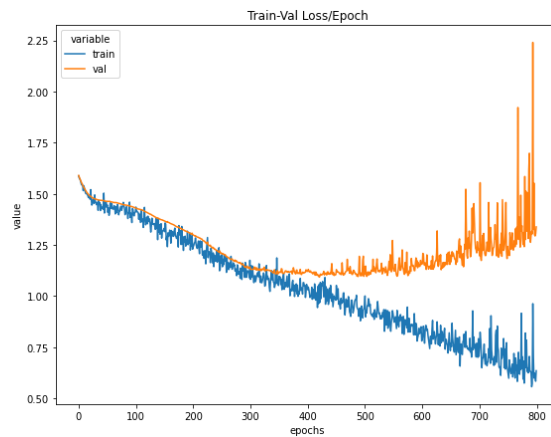
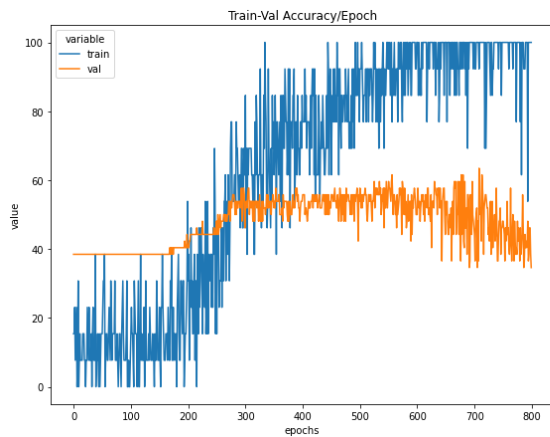
```

              precision    recall  f1-score   support

     0         0.66         0.54         0.59         50
     1         0.29         0.40         0.33         30
     2         0.20         0.17         0.18         24
     3         0.50         0.53         0.51         17
     4         0.56         0.56         0.56          9

 accuracy               0.44         130
 macro avg              0.44         0.44         0.44         130
 weighted avg           0.46         0.44         0.44         130

```



Appendix BE

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	800
Batch Size	36
Learning Rate	0.005
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (2048) => (1024) 2: (1024) => (512) 3: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Weight Decay	0.01
Drop Out Rate	0.15
Last Epoch Information	Epoch 800: Train Loss: 0.77542 Val Loss: 1.29845 Train Acc: 100.000 Val Acc: 36.538
Test Accuracy	42%

Output table screen shot:

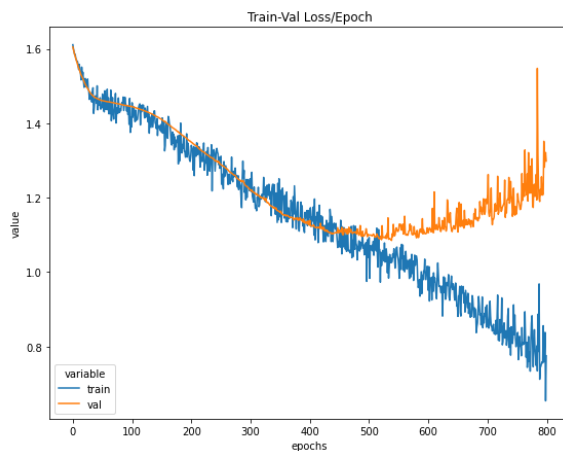
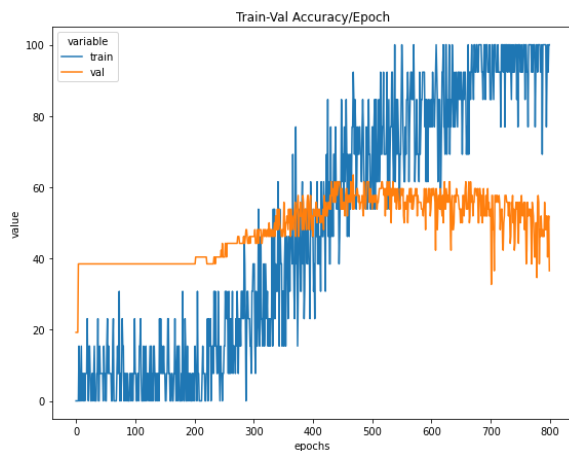
```

                precision    recall  f1-score   support

     0         0.64         0.50         0.56         50
     1         0.26         0.27         0.26         30
     2         0.23         0.38         0.29         24
     3         0.55         0.35         0.43         17
     4         0.60         0.67         0.63          9

 accuracy               0.42         130
 macro avg              0.46         0.43         0.43         130
 weighted avg           0.46         0.42         0.43         130

```



Appendix BF

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	900
Batch Size	36
Learning Rate	0.0032
Number of Hidden Layers	3
Hidden Layers: Inputs and Outputs	1: (2048) => (1024) 2: (1024) => (512) 3: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Weight Decay	0.01
Drop Out Rate	0.15
Last Epoch Information	Epoch 858: Train Loss: 0.99290 Val Loss: 1.14043 Train Acc: 69.231 Val Acc: 46.154
Test Accuracy	51%

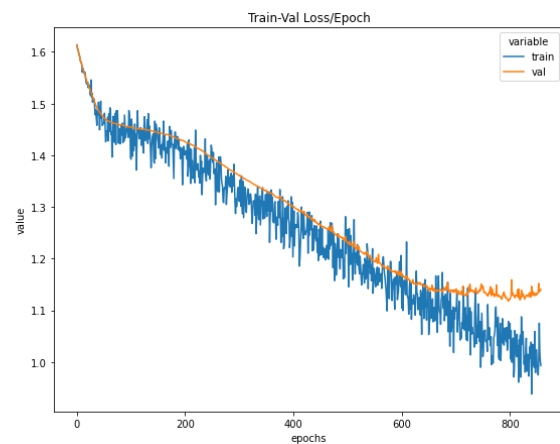
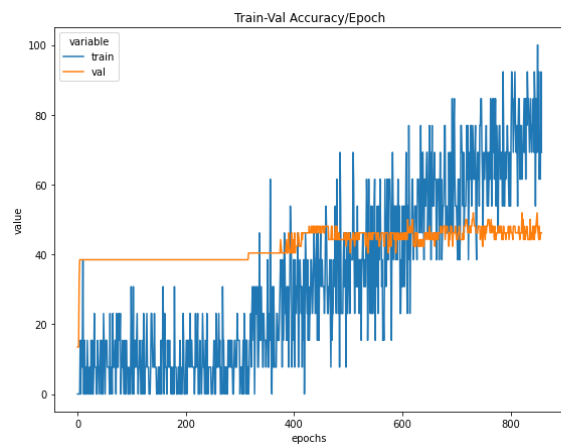
Output table screen shot:

```

0      0.58      0.90      0.70      50
1      0.50      0.27      0.35      30
2      0.20      0.08      0.12      24
3      0.42      0.65      0.51      17
4      0.00      0.00      0.00      9

accuracy      0.51      130
macro avg     0.34      0.38      0.34      130
weighted avg  0.43      0.51      0.44      130

```



Appendix BG

Activation Function	ReLU
Loss Function	Cross Entropy Loss
Optimizer	SGD
Training Epochs	1000
Batch Size	25
Learning Rate	0.0023
Number of Hidden Layers	2
Hidden Layers: Inputs and Outputs	1: (1024) => (512) 2: (512) => (256)
Batch Normalization	-
Early Stopping Patience	-
Weight Decay	0.01
Drop Out Rate	0.01
Last Epoch Information	Epoch 1000: Train Loss: 0.93929 Val Loss: 1.07883 Train Acc: 94.737 Val Acc: 53.846
Test Accuracy	51%

Output table screen shot:

```

precision    recall  f1-score   support

0           0.60      0.74      0.66         50
1           0.33      0.27      0.30         30
2           0.33      0.33      0.33         24
3           0.62      0.47      0.53         17
4           0.71      0.56      0.63          9

accuracy          0.51         130
macro avg          0.52         130
weighted avg       0.50         130

```

