```
C:\Users\psiml8\AppData\Local\Programs\Python\Python39\python.exe C:/Users/psiml8/Desktop/Projekat/graph-transformer-psiml/GATTransformer.py
Files already downloaded and verified
Files already downloaded and verified
wandb: Currently logged in as: njmarko. Use `wandb login --relogin` to force relogin
wandb: wandb version 0.13.1 is available!  To upgrade, please run:
wandb:  $ pip install wandb --upgrade
wandb: Tracking run with wandb version 0.13.0
wandb: Run data is saved locally in C:\Users\psiml8\Desktop\Projekat\graph-transformer-psiml\wandb\run-20220805_230153-26qe2pmq
wandb: Run `wandb offline` to turn off syncing.
wandb: Syncing run worthy-shape-1
wandb:  View project at https://wandb.ai/njmarko/gat0
wandb:  View run at https://wandb.ai/njmarko/gat0/runs/26qe2pmq
Epoch: 1
[    0/50000 (  0%)]  Loss: 4.6190
[20000/50000 ( 40%)]  Loss: 4.6175
[40000/50000 ( 80%)]  Loss: 4.5996
Accuracy: 0.95%

Average test loss: 4.6089  Accuracy:  100/10000 (1.00%)

Epoch: 2
[    0/50000 (  0%)]  Loss: 4.6019
[20000/50000 ( 40%)]  Loss: 4.6140
[40000/50000 ( 80%)]  Loss: 4.6135
Accuracy: 0.94%

Average test loss: 4.6078  Accuracy:  100/10000 (1.00%)

Epoch: 3
[    0/50000 (  0%)]  Loss: 4.6087
[20000/50000 ( 40%)]  Loss: 4.6054
[40000/50000 ( 80%)]  Loss: 4.5984
```

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Accuracy: 0.99%

Average test loss: 4.6094  Accuracy:  100/10000 (1.00%)

Epoch: 4
[    0/50000 (  0%)]  Loss: 4.6018
[20000/50000 ( 40%)]  Loss: 4.5988
[40000/50000 ( 80%)]  Loss: 4.6136
Accuracy: 0.96%

Average test loss: 4.6083  Accuracy:  100/10000 (1.00%)

Epoch: 5
[    0/50000 (  0%)]  Loss: 4.6083
[20000/50000 ( 40%)]  Loss: 4.6083
[40000/50000 ( 80%)]  Loss: 4.6085
Accuracy: 0.94%

Average test loss: 4.6094  Accuracy:  100/10000 (1.00%)

Epoch: 6
[    0/50000 (  0%)]  Loss: 4.6165
[20000/50000 ( 40%)]  Loss: 4.6118
[40000/50000 ( 80%)]  Loss: 4.6114
Accuracy: 1.05%

Average test loss: 4.6085  Accuracy:  100/10000 (1.00%)

Epoch: 7
[    0/50000 (  0%)]  Loss: 4.6113
[20000/50000 ( 40%)]  Loss: 4.5985
[40000/50000 ( 80%)]  Loss: 4.6139
Accuracy: 0.84%

Average test loss: 4.6086  Accuracy:  100/10000 (1.00%)

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Epoch: 8
[    0/50000 (  0%)]  Loss: 4.6077
[20000/50000 ( 40%)]  Loss: 4.6058
[40000/50000 ( 80%)]  Loss: 4.6140
Accuracy: 0.96%

Average test loss: 4.6085  Accuracy:  100/10000 (1.00%)

Epoch: 9
[    0/50000 (  0%)]  Loss: 4.6047
[20000/50000 ( 40%)]  Loss: 4.6140
[40000/50000 ( 80%)]  Loss: 4.6226
Accuracy: 0.99%

Average test loss: 4.6094  Accuracy:  100/10000 (1.00%)

Epoch: 10
[    0/50000 (  0%)]  Loss: 4.6091
[20000/50000 ( 40%)]  Loss: 4.6072
[40000/50000 ( 80%)]  Loss: 4.6110
Accuracy: 0.94%

Average test loss: 4.6097  Accuracy:  100/10000 (1.00%)

Epoch: 11
[    0/50000 (  0%)]  Loss: 4.6089
[20000/50000 ( 40%)]  Loss: 4.6011
[40000/50000 ( 80%)]  Loss: 4.6107
Accuracy: 0.96%

Average test loss: 4.6081  Accuracy:  100/10000 (1.00%)

Epoch: 12
[    0/50000 (  0%)]  Loss: 4.6201
[20000/50000 ( 40%)]  Loss: 4.6100
[40000/50000 ( 80%)]  Loss: 4.6149
Accuracy: 0.93%
```

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106
107 Average test loss: 4.6099  Accuracy:  100/10000 (1.
    00%)
108
109 Epoch: 13
110 [    0/50000 (  0%)]  Loss: 4.6089
111 [20000/50000 ( 40%)]  Loss: 4.6105
112 [40000/50000 ( 80%)]  Loss: 4.6113
113 Accuracy: 1.00%
114
115 Average test loss: 4.6095  Accuracy:  100/10000 (1.
    00%)
116
117 Epoch: 14
118 [    0/50000 (  0%)]  Loss: 4.6004
119 [20000/50000 ( 40%)]  Loss: 4.6146
120 [40000/50000 ( 80%)]  Loss: 4.6127
121 Accuracy: 0.95%
122
123 Average test loss: 4.6101  Accuracy:  100/10000 (1.
    00%)
124
125 Epoch: 15
126 [    0/50000 (  0%)]  Loss: 4.6106
127 [20000/50000 ( 40%)]  Loss: 4.6122
128 [40000/50000 ( 80%)]  Loss: 4.6122
129 Accuracy: 0.89%
130
131 Average test loss: 4.6090  Accuracy:  100/10000 (1.
    00%)
132
133 Epoch: 16
134 [    0/50000 (  0%)]  Loss: 4.6047
135 [20000/50000 ( 40%)]  Loss: 4.5997
136 [40000/50000 ( 80%)]  Loss: 4.5948
137 Accuracy: 0.97%
138
139 Average test loss: 4.6094  Accuracy:  100/10000 (1.
    00%)
140
141 Epoch: 17
```

```
[    0/50000 (  0%)]  Loss: 4.6129
[20000/50000 ( 40%)]  Loss: 4.6114
[40000/50000 ( 80%)]  Loss: 4.6081
Accuracy: 0.94%

Average test loss: 4.6098  Accuracy:  100/10000 (1.00%)

Epoch: 18
[    0/50000 (  0%)]  Loss: 4.6098
[20000/50000 ( 40%)]  Loss: 4.6132
[40000/50000 ( 80%)]  Loss: 4.6143
Accuracy: 0.96%

Average test loss: 4.6108  Accuracy:  100/10000 (1.00%)

Epoch: 19
[    0/50000 (  0%)]  Loss: 4.6169
[20000/50000 ( 40%)]  Loss: 4.6201
[40000/50000 ( 80%)]  Loss: 4.6141
Accuracy: 0.93%

Average test loss: 4.6093  Accuracy:  100/10000 (1.00%)

Epoch: 20
[    0/50000 (  0%)]  Loss: 4.6104
[20000/50000 ( 40%)]  Loss: 4.6069
[40000/50000 ( 80%)]  Loss: 4.6031
Accuracy: 0.95%

Average test loss: 4.6105  Accuracy:  100/10000 (1.00%)

Epoch: 21
[    0/50000 (  0%)]  Loss: 4.6073
[20000/50000 ( 40%)]  Loss: 4.6110
[40000/50000 ( 80%)]  Loss: 4.6049
Accuracy: 0.98%

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Average test loss: 4.6093  Accuracy:  100/10000 (1.00%)

Epoch: 22
[    0/50000 (  0%)]  Loss: 4.6039
[20000/50000 ( 40%)]  Loss: 4.6129
[40000/50000 ( 80%)]  Loss: 4.6123
Accuracy: 1.00%

Average test loss: 4.6091  Accuracy:  100/10000 (1.00%)

Epoch: 23
[    0/50000 (  0%)]  Loss: 4.6119
[20000/50000 ( 40%)]  Loss: 4.6082
[40000/50000 ( 80%)]  Loss: 4.6044
Accuracy: 0.93%

Average test loss: 4.6094  Accuracy:  100/10000 (1.00%)

Epoch: 24
[    0/50000 (  0%)]  Loss: 4.6024
[20000/50000 ( 40%)]  Loss: 4.6127
[40000/50000 ( 80%)]  Loss: 4.6122
Accuracy: 0.96%

Average test loss: 4.6090  Accuracy:  100/10000 (1.00%)

Epoch: 25
[    0/50000 (  0%)]  Loss: 4.6088
[20000/50000 ( 40%)]  Loss: 4.6141
[40000/50000 ( 80%)]  Loss: 4.6076
Accuracy: 0.96%

Average test loss: 4.6092  Accuracy:  100/10000 (1.00%)

Epoch: 26
[    0/50000 (  0%)]  Loss: 4.6087
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[20000/50000 ( 40%)]  Loss: 4.6100
[40000/50000 ( 80%)]  Loss: 4.6111
Accuracy: 0.99%

Average test loss: 4.6090  Accuracy:  100/10000 (1.00%)

Epoch: 27
[    0/50000 (  0%)]  Loss: 4.6122
[20000/50000 ( 40%)]  Loss: 4.6096
[40000/50000 ( 80%)]  Loss: 4.6099
Accuracy: 0.93%

Average test loss: 4.6094  Accuracy:  100/10000 (1.00%)

Epoch: 28
[    0/50000 (  0%)]  Loss: 4.6087
[20000/50000 ( 40%)]  Loss: 4.6067
[40000/50000 ( 80%)]  Loss: 4.6129
Accuracy: 0.97%

Average test loss: 4.6097  Accuracy:  100/10000 (1.00%)

Epoch: 29
[    0/50000 (  0%)]  Loss: 4.6125
[20000/50000 ( 40%)]  Loss: 4.6157
[40000/50000 ( 80%)]  Loss: 4.6137
Accuracy: 0.99%

Average test loss: 4.6094  Accuracy:  100/10000 (1.00%)

Epoch: 30
[    0/50000 (  0%)]  Loss: 4.6119
[20000/50000 ( 40%)]  Loss: 4.6086
[40000/50000 ( 80%)]  Loss: 4.6091
Accuracy: 0.92%

Average test loss: 4.6090  Accuracy:  100/10000 (1.
```

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00%)

Epoch: 31
[    0/50000 (  0%)]  Loss: 4.6070
[20000/50000 ( 40%)]  Loss: 4.6138
[40000/50000 ( 80%)]  Loss: 4.6083
Accuracy: 1.01%

Average test loss: 4.6106  Accuracy:  100/10000 (1.00%)

Epoch: 32
[    0/50000 (  0%)]  Loss: 4.6093
[20000/50000 ( 40%)]  Loss: 4.6185
[40000/50000 ( 80%)]  Loss: 4.6115
Accuracy: 0.96%

Average test loss: 4.6107  Accuracy:  100/10000 (1.00%)

Epoch: 33
[    0/50000 (  0%)]  Loss: 4.6130
[20000/50000 ( 40%)]  Loss: 4.6172
[40000/50000 ( 80%)]  Loss: 4.6001
Accuracy: 0.96%

Average test loss: 4.6094  Accuracy:  100/10000 (1.00%)

Epoch: 34
[    0/50000 (  0%)]  Loss: 4.6090
[20000/50000 ( 40%)]  Loss: 4.6158
[40000/50000 ( 80%)]  Loss: 4.6128
Accuracy: 0.98%

Average test loss: 4.6090  Accuracy:  100/10000 (1.00%)

Epoch: 35
[    0/50000 (  0%)]  Loss: 4.6140
[20000/50000 ( 40%)]  Loss: 4.6168
```

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[40000/50000 ( 80%)]  Loss: 4.6132
Accuracy: 0.93%

Average test loss: 4.6100  Accuracy:  100/10000 (1.00%)

Epoch: 36
[    0/50000 (  0%)]  Loss: 4.6153
[20000/50000 ( 40%)]  Loss: 4.6065
[40000/50000 ( 80%)]  Loss: 4.6132
Accuracy: 0.88%

Average test loss: 4.6089  Accuracy:  100/10000 (1.00%)

Epoch: 37
[    0/50000 (  0%)]  Loss: 4.6047
[20000/50000 ( 40%)]  Loss: 4.6079
[40000/50000 ( 80%)]  Loss: 4.6115
Accuracy: 0.95%

Average test loss: 4.6080  Accuracy:  100/10000 (1.00%)

Epoch: 38
[    0/50000 (  0%)]  Loss: 4.6151
[20000/50000 ( 40%)]  Loss: 4.6159
[40000/50000 ( 80%)]  Loss: 4.6150
Accuracy: 0.98%

Average test loss: 4.6093  Accuracy:  100/10000 (1.00%)

Epoch: 39
[    0/50000 (  0%)]  Loss: 4.6039
[20000/50000 ( 40%)]  Loss: 4.6081
[40000/50000 ( 80%)]  Loss: 4.6032
Accuracy: 0.96%

Average test loss: 4.6092  Accuracy:  100/10000 (1.00%)
```

```
324
325 Epoch: 40
326 [    0/50000 (  0%)]  Loss: 4.6057
327 [20000/50000 ( 40%)]  Loss: 4.6048
328 [40000/50000 ( 80%)]  Loss: 4.6235
329 Accuracy: 0.92%
330
331 Average test loss: 4.6100  Accuracy:  100/10000 (1.
    00%)
332
333 Execution time: 10592.64 seconds
334 Epoch: 1
335 [    0/50000 (  0%)]  Loss: 4.6526
336 [20000/50000 ( 40%)]  Loss: 4.0597
337 [40000/50000 ( 80%)]  Loss: 3.7930
338 Accuracy: 7.25%
339
340 Average test loss: 3.7193  Accuracy: 1165/10000 (11.
    65%)
341
342 Epoch: 2
343 [    0/50000 (  0%)]  Loss: 3.6610
344 [20000/50000 ( 40%)]  Loss: 3.5253
345 [40000/50000 ( 80%)]  Loss: 3.5504
346 Accuracy: 15.15%
347
348 Average test loss: 3.4504  Accuracy: 1699/10000 (16.
    99%)
349
350 Epoch: 3
351 [    0/50000 (  0%)]  Loss: 3.3658
352 [20000/50000 ( 40%)]  Loss: 3.2441
353 [40000/50000 ( 80%)]  Loss: 3.3497
354 Accuracy: 18.93%
355
356 Average test loss: 3.2615  Accuracy: 2090/10000 (20.
    90%)
357
358 Epoch: 4
359 [    0/50000 (  0%)]  Loss: 3.3179
360 [20000/50000 ( 40%)]  Loss: 3.0605
```

```
[40000/50000 ( 80%)]  Loss: 3.1772
Accuracy: 21.93%

Average test loss: 3.1951  Accuracy: 2233/10000 (22.33%)

Epoch: 5
[    0/50000 (  0%)]  Loss: 3.0790
[20000/50000 ( 40%)]  Loss: 3.2215
[40000/50000 ( 80%)]  Loss: 3.2014
Accuracy: 24.16%

Average test loss: 3.1046  Accuracy: 2401/10000 (24.01%)

Epoch: 6
[    0/50000 (  0%)]  Loss: 2.9551
[20000/50000 ( 40%)]  Loss: 2.9573
[40000/50000 ( 80%)]  Loss: 2.9176
Accuracy: 26.08%

Average test loss: 3.0697  Accuracy: 2543/10000 (25.43%)

Epoch: 7
[    0/50000 (  0%)]  Loss: 2.6529
[20000/50000 ( 40%)]  Loss: 2.9565
[40000/50000 ( 80%)]  Loss: 2.8297
Accuracy: 27.75%

Average test loss: 3.0295  Accuracy: 2563/10000 (25.63%)

Epoch: 8
[    0/50000 (  0%)]  Loss: 2.5425
[20000/50000 ( 40%)]  Loss: 2.7173
[40000/50000 ( 80%)]  Loss: 2.6789
Accuracy: 29.52%

Average test loss: 3.0213  Accuracy: 2628/10000 (26.28%)
```

```
397
398 Epoch: 9
399 [    0/50000 (  0%)]  Loss: 2.6654
400 [20000/50000 ( 40%)]  Loss: 2.6794
401 [40000/50000 ( 80%)]  Loss: 2.7758
402 Accuracy: 31.50%
403
404 Average test loss: 2.9719  Accuracy: 2777/10000 (27.
    77%)
405
406 Epoch: 10
407 [    0/50000 (  0%)]  Loss: 2.3279
408 [20000/50000 ( 40%)]  Loss: 2.5424
409 [40000/50000 ( 80%)]  Loss: 2.5968
410 Accuracy: 33.00%
411
412 Average test loss: 2.9764  Accuracy: 2777/10000 (27.
    77%)
413
414 Epoch: 11
415 [    0/50000 (  0%)]  Loss: 2.1296
416 [20000/50000 ( 40%)]  Loss: 2.5075
417 [40000/50000 ( 80%)]  Loss: 2.5929
418 Accuracy: 34.62%
419
420 Average test loss: 2.9703  Accuracy: 2794/10000 (27.
    94%)
421
422 Epoch: 12
423 [    0/50000 (  0%)]  Loss: 2.2755
424 [20000/50000 ( 40%)]  Loss: 2.4667
425 [40000/50000 ( 80%)]  Loss: 2.5767
426 Accuracy: 36.27%
427
428 Average test loss: 2.9675  Accuracy: 2830/10000 (28.
    30%)
429
430 Epoch: 13
431 [    0/50000 (  0%)]  Loss: 2.2764
432 [20000/50000 ( 40%)]  Loss: 2.3524
433 [40000/50000 ( 80%)]  Loss: 2.4295
```

```
Accuracy: 38.68%

Average test loss: 2.9932  Accuracy: 2849/10000 (28.49%)

Epoch: 14
[    0/50000 (  0%)]  Loss: 2.3359
[20000/50000 ( 40%)]  Loss: 2.0914
[40000/50000 ( 80%)]  Loss: 2.3516
Accuracy: 40.27%

Average test loss: 3.0305  Accuracy: 2954/10000 (29.54%)

Epoch: 15
[    0/50000 (  0%)]  Loss: 1.8243
[20000/50000 ( 40%)]  Loss: 2.2574
[40000/50000 ( 80%)]  Loss: 2.0754
Accuracy: 42.19%

Average test loss: 3.0247  Accuracy: 2928/10000 (29.28%)

Epoch: 16
[    0/50000 (  0%)]  Loss: 1.7635
[20000/50000 ( 40%)]  Loss: 2.0154
[40000/50000 ( 80%)]  Loss: 2.1178
Accuracy: 43.74%

Average test loss: 3.1572  Accuracy: 2859/10000 (28.59%)

Epoch: 17
[    0/50000 (  0%)]  Loss: 1.8814
[20000/50000 ( 40%)]  Loss: 2.0953
[40000/50000 ( 80%)]  Loss: 1.9333
Accuracy: 45.80%

Average test loss: 3.1191  Accuracy: 2922/10000 (29.22%)

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```
Epoch: 18
[    0/50000 (  0%)]  Loss: 1.4985
[20000/50000 ( 40%)]  Loss: 1.8711
[40000/50000 ( 80%)]  Loss: 1.8420
Accuracy: 48.34%

Average test loss: 3.2659  Accuracy: 2821/10000 (28.21%)

Epoch: 19
[    0/50000 (  0%)]  Loss: 1.5384
[20000/50000 ( 40%)]  Loss: 1.9481
[40000/50000 ( 80%)]  Loss: 2.0290
Accuracy: 50.10%

Average test loss: 3.3332  Accuracy: 2826/10000 (28.26%)

Epoch: 20
[    0/50000 (  0%)]  Loss: 1.5455
[20000/50000 ( 40%)]  Loss: 1.7835
[40000/50000 ( 80%)]  Loss: 1.7834
Accuracy: 52.56%

Average test loss: 3.4316  Accuracy: 2902/10000 (29.02%)

Epoch: 21
[    0/50000 (  0%)]  Loss: 1.3895
[20000/50000 ( 40%)]  Loss: 1.3581
[40000/50000 ( 80%)]  Loss: 1.7293
Accuracy: 53.99%

Average test loss: 3.4947  Accuracy: 2782/10000 (27.82%)

Epoch: 22
[    0/50000 (  0%)]  Loss: 1.3996
[20000/50000 ( 40%)]  Loss: 1.5106
[40000/50000 ( 80%)]  Loss: 1.4612
Accuracy: 55.86%
```

```
507
508 Average test loss: 3.5558  Accuracy: 2846/10000 (28.
    46%)
509
510 Epoch: 23
511 [    0/50000 (  0%)]  Loss: 1.3057
512 [20000/50000 ( 40%)]  Loss: 1.3138
513 [40000/50000 ( 80%)]  Loss: 1.4255
514 Accuracy: 58.33%
515
516 Average test loss: 3.7411  Accuracy: 2810/10000 (28.
    10%)
517
518 Epoch: 24
519 [    0/50000 (  0%)]  Loss: 1.1169
520 [20000/50000 ( 40%)]  Loss: 1.2220
521 [40000/50000 ( 80%)]  Loss: 1.4140
522 Accuracy: 59.61%
523
524 Average test loss: 3.7811  Accuracy: 2841/10000 (28.
    41%)
525
526 Epoch: 25
527 [    0/50000 (  0%)]  Loss: 1.1503
528 [20000/50000 ( 40%)]  Loss: 1.2362
529 [40000/50000 ( 80%)]  Loss: 1.5300
530 Accuracy: 61.74%
531
532 Average test loss: 3.8904  Accuracy: 2755/10000 (27.
    55%)
533
534 Epoch: 26
535 [    0/50000 (  0%)]  Loss: 1.0211
536 [20000/50000 ( 40%)]  Loss: 1.2467
537 [40000/50000 ( 80%)]  Loss: 1.4038
538 Accuracy: 63.51%
539
540 Average test loss: 4.0091  Accuracy: 2781/10000 (27.
    81%)
541
542 Epoch: 27
```

```
[    0/50000 (  0%)]  Loss: 1.1132
[20000/50000 ( 40%)]  Loss: 1.1342
[40000/50000 ( 80%)]  Loss: 1.1250
Accuracy: 65.37%

Average test loss: 4.2925  Accuracy: 2737/10000 (27.37%)

Epoch: 28
[    0/50000 (  0%)]  Loss: 1.0862
[20000/50000 ( 40%)]  Loss: 0.9412
[40000/50000 ( 80%)]  Loss: 1.2051
Accuracy: 66.30%

Average test loss: 4.3463  Accuracy: 2706/10000 (27.06%)

Epoch: 29
[    0/50000 (  0%)]  Loss: 0.9265
[20000/50000 ( 40%)]  Loss: 0.8929
[40000/50000 ( 80%)]  Loss: 0.8706
Accuracy: 68.24%

Average test loss: 4.5514  Accuracy: 2730/10000 (27.30%)

Epoch: 30
[    0/50000 (  0%)]  Loss: 0.9603
[20000/50000 ( 40%)]  Loss: 0.9323
[40000/50000 ( 80%)]  Loss: 1.0019
Accuracy: 69.97%

Average test loss: 4.6643  Accuracy: 2702/10000 (27.02%)

Epoch: 31
[    0/50000 (  0%)]  Loss: 0.8361
[20000/50000 ( 40%)]  Loss: 0.9063
[40000/50000 ( 80%)]  Loss: 1.1779
Accuracy: 70.78%

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```
Average test loss: 4.7739  Accuracy: 2803/10000 (28.03%)

Epoch: 32
[    0/50000 (  0%)]  Loss: 0.7101
[20000/50000 ( 40%)]  Loss: 0.9156
[40000/50000 ( 80%)]  Loss: 1.1029
Accuracy: 71.81%

Average test loss: 4.9658  Accuracy: 2704/10000 (27.04%)

Epoch: 33
[    0/50000 (  0%)]  Loss: 0.8777
[20000/50000 ( 40%)]  Loss: 0.8926
[40000/50000 ( 80%)]  Loss: 0.7946
Accuracy: 73.07%

Average test loss: 5.0175  Accuracy: 2793/10000 (27.93%)

Epoch: 34
[    0/50000 (  0%)]  Loss: 0.8927
[20000/50000 ( 40%)]  Loss: 0.8499
[40000/50000 ( 80%)]  Loss: 0.7965
Accuracy: 74.37%

Average test loss: 5.1032  Accuracy: 2683/10000 (26.83%)

Epoch: 35
[    0/50000 (  0%)]  Loss: 0.6646
[20000/50000 ( 40%)]  Loss: 0.8077
[40000/50000 ( 80%)]  Loss: 0.8853
Accuracy: 74.69%

Average test loss: 5.2349  Accuracy: 2711/10000 (27.11%)

Epoch: 36
[    0/50000 (  0%)]  Loss: 0.5836
```

```
[20000/50000 ( 40%)]  Loss: 0.5789
[40000/50000 ( 80%)]  Loss: 0.8162
Accuracy: 76.06%

Average test loss: 5.4539  Accuracy: 2648/10000 (26.48%)

Epoch: 37
[    0/50000 (  0%)]  Loss: 0.7303
[20000/50000 ( 40%)]  Loss: 0.6324
[40000/50000 ( 80%)]  Loss: 0.9448
Accuracy: 76.08%

Average test loss: 5.5567  Accuracy: 2741/10000 (27.41%)

Epoch: 38
[    0/50000 (  0%)]  Loss: 0.6284
[20000/50000 ( 40%)]  Loss: 0.7285
[40000/50000 ( 80%)]  Loss: 0.6655
Accuracy: 77.88%

Average test loss: 5.5840  Accuracy: 2767/10000 (27.67%)

Epoch: 39
[    0/50000 (  0%)]  Loss: 0.3756
[20000/50000 ( 40%)]  Loss: 0.6796
[40000/50000 ( 80%)]  Loss: 0.7577
Accuracy: 78.87%

Average test loss: 5.6947  Accuracy: 2680/10000 (26.80%)

Epoch: 40
[    0/50000 (  0%)]  Loss: 0.5718
[20000/50000 ( 40%)]  Loss: 0.5685
[40000/50000 ( 80%)]  Loss: 0.9481
Accuracy: 79.34%

Average test loss: 6.0175  Accuracy: 2641/10000 (26.
```

```
652 41%)
653
654 Execution time: 10580.65 seconds
655 Epoch: 1
656 [    0/50000 (  0%)]  Loss: 4.6512
657 [20000/50000 ( 40%)]  Loss: 4.6040
658 [40000/50000 ( 80%)]  Loss: 4.6082
659 Accuracy: 1.01%
660
661 Average test loss: 4.6056  Accuracy:  100/10000 (1.
    00%)
662
663 Epoch: 2
664 [    0/50000 (  0%)]  Loss: 4.6046
665 [20000/50000 ( 40%)]  Loss: 4.6055
666 [40000/50000 ( 80%)]  Loss: 4.6062
667 Accuracy: 0.88%
668
669 Average test loss: 4.6053  Accuracy:  100/10000 (1.
    00%)
670
671 Epoch: 3
672 [    0/50000 (  0%)]  Loss: 4.6065
673 [20000/50000 ( 40%)]  Loss: 4.6037
674 [40000/50000 ( 80%)]  Loss: 4.6060
675 Accuracy: 0.90%
676
677 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
678
679 Epoch: 4
680 [    0/50000 (  0%)]  Loss: 4.6038
681 [20000/50000 ( 40%)]  Loss: 4.6071
682 [40000/50000 ( 80%)]  Loss: 4.6061
683 Accuracy: 0.87%
684
685 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
686
687 Epoch: 5
688 [    0/50000 (  0%)]  Loss: 4.6059
```

```
[20000/50000 ( 40%)]  Loss: 4.6078
[40000/50000 ( 80%)]  Loss: 4.6055
Accuracy: 0.88%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 6
[    0/50000 (  0%)]  Loss: 4.6036
[20000/50000 ( 40%)]  Loss: 4.6073
[40000/50000 ( 80%)]  Loss: 4.6070
Accuracy: 0.93%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 7
[    0/50000 (  0%)]  Loss: 4.6057
[20000/50000 ( 40%)]  Loss: 4.6093
[40000/50000 ( 80%)]  Loss: 4.6072
Accuracy: 0.93%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 8
[    0/50000 (  0%)]  Loss: 4.6049
[20000/50000 ( 40%)]  Loss: 4.6050
[40000/50000 ( 80%)]  Loss: 4.6080
Accuracy: 0.86%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 9
[    0/50000 (  0%)]  Loss: 4.6053
[20000/50000 ( 40%)]  Loss: 4.6053
[40000/50000 ( 80%)]  Loss: 4.6070
Accuracy: 0.85%

Average test loss: 4.6052  Accuracy:  100/10000 (1.
```

```
00%)

Epoch: 10
[    0/50000 (  0%)]  Loss: 4.6053
[20000/50000 ( 40%)]  Loss: 4.6094
[40000/50000 ( 80%)]  Loss: 4.6071
Accuracy: 0.86%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 11
[    0/50000 (  0%)]  Loss: 4.6043
[20000/50000 ( 40%)]  Loss: 4.6081
[40000/50000 ( 80%)]  Loss: 4.6052
Accuracy: 0.88%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 12
[    0/50000 (  0%)]  Loss: 4.6053
[20000/50000 ( 40%)]  Loss: 4.6063
[40000/50000 ( 80%)]  Loss: 4.6062
Accuracy: 0.94%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 13
[    0/50000 (  0%)]  Loss: 4.6048
[20000/50000 ( 40%)]  Loss: 4.6042
[40000/50000 ( 80%)]  Loss: 4.6067
Accuracy: 0.90%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 14
[    0/50000 (  0%)]  Loss: 4.6063
[20000/50000 ( 40%)]  Loss: 4.6060
```

```
[40000/50000 ( 80%)]  Loss: 4.6052
Accuracy: 0.92%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 15
[    0/50000 (  0%)]  Loss: 4.6049
[20000/50000 ( 40%)]  Loss: 4.6070
[40000/50000 ( 80%)]  Loss: 4.6046
Accuracy: 0.90%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 16
[    0/50000 (  0%)]  Loss: 4.6055
[20000/50000 ( 40%)]  Loss: 4.6043
[40000/50000 ( 80%)]  Loss: 4.6065
Accuracy: 0.82%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 17
[    0/50000 (  0%)]  Loss: 4.6041
[20000/50000 ( 40%)]  Loss: 4.6060
[40000/50000 ( 80%)]  Loss: 4.6053
Accuracy: 0.92%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 18
[    0/50000 (  0%)]  Loss: 4.6062
[20000/50000 ( 40%)]  Loss: 4.6051
[40000/50000 ( 80%)]  Loss: 4.6063
Accuracy: 0.86%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)
```

```
798
799 Epoch: 19
800 [    0/50000 (  0%)]  Loss: 4.6052
801 [20000/50000 ( 40%)]  Loss: 4.6055
802 [40000/50000 ( 80%)]  Loss: 4.6074
803 Accuracy: 0.84%
804
805 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
806
807 Epoch: 20
808 [    0/50000 (  0%)]  Loss: 4.6048
809 [20000/50000 ( 40%)]  Loss: 4.6034
810 [40000/50000 ( 80%)]  Loss: 4.6062
811 Accuracy: 0.89%
812
813 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
814
815 Epoch: 21
816 [    0/50000 (  0%)]  Loss: 4.6041
817 [20000/50000 ( 40%)]  Loss: 4.6056
818 [40000/50000 ( 80%)]  Loss: 4.6077
819 Accuracy: 0.81%
820
821 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
822
823 Epoch: 22
824 [    0/50000 (  0%)]  Loss: 4.6051
825 [20000/50000 ( 40%)]  Loss: 4.6042
826 [40000/50000 ( 80%)]  Loss: 4.6076
827 Accuracy: 0.82%
828
829 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
830
831 Epoch: 23
832 [    0/50000 (  0%)]  Loss: 4.6042
833 [20000/50000 ( 40%)]  Loss: 4.6033
834 [40000/50000 ( 80%)]  Loss: 4.6048
```

```
Accuracy: 0.93%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 24
[    0/50000 (  0%)]  Loss: 4.6056
[20000/50000 ( 40%)]  Loss: 4.6046
[40000/50000 ( 80%)]  Loss: 4.6098
Accuracy: 0.87%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 25
[    0/50000 (  0%)]  Loss: 4.6056
[20000/50000 ( 40%)]  Loss: 4.6082
[40000/50000 ( 80%)]  Loss: 4.6065
Accuracy: 0.86%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 26
[    0/50000 (  0%)]  Loss: 4.6037
[20000/50000 ( 40%)]  Loss: 4.6049
[40000/50000 ( 80%)]  Loss: 4.6064
Accuracy: 0.91%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 27
[    0/50000 (  0%)]  Loss: 4.6065
[20000/50000 ( 40%)]  Loss: 4.6055
[40000/50000 ( 80%)]  Loss: 4.6073
Accuracy: 0.85%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

```

```
Epoch: 28
[    0/50000 (  0%)]  Loss: 4.6057
[20000/50000 ( 40%)]  Loss: 4.6096
[40000/50000 ( 80%)]  Loss: 4.6073
Accuracy: 0.89%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 29
[    0/50000 (  0%)]  Loss: 4.6061
[20000/50000 ( 40%)]  Loss: 4.6059
[40000/50000 ( 80%)]  Loss: 4.6062
Accuracy: 0.93%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 30
[    0/50000 (  0%)]  Loss: 4.6063
[20000/50000 ( 40%)]  Loss: 4.6052
[40000/50000 ( 80%)]  Loss: 4.6055
Accuracy: 0.86%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 31
[    0/50000 (  0%)]  Loss: 4.6058
[20000/50000 ( 40%)]  Loss: 4.6038
[40000/50000 ( 80%)]  Loss: 4.6060
Accuracy: 0.90%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 32
[    0/50000 (  0%)]  Loss: 4.6050
[20000/50000 ( 40%)]  Loss: 4.6088
[40000/50000 ( 80%)]  Loss: 4.6071
Accuracy: 0.89%
```

```
908
909 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
910
911 Epoch: 33
912 [    0/50000 (  0%)]  Loss: 4.6050
913 [20000/50000 ( 40%)]  Loss: 4.6032
914 [40000/50000 ( 80%)]  Loss: 4.6047
915 Accuracy: 0.84%
916
917 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
918
919 Epoch: 34
920 [    0/50000 (  0%)]  Loss: 4.6048
921 [20000/50000 ( 40%)]  Loss: 4.6048
922 [40000/50000 ( 80%)]  Loss: 4.6065
923 Accuracy: 0.85%
924
925 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
926
927 Epoch: 35
928 [    0/50000 (  0%)]  Loss: 4.6058
929 [20000/50000 ( 40%)]  Loss: 4.6069
930 [40000/50000 ( 80%)]  Loss: 4.6071
931 Accuracy: 0.93%
932
933 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
934
935 Epoch: 36
936 [    0/50000 (  0%)]  Loss: 4.6053
937 [20000/50000 ( 40%)]  Loss: 4.6072
938 [40000/50000 ( 80%)]  Loss: 4.6054
939 Accuracy: 0.90%
940
941 Average test loss: 4.6052  Accuracy:  100/10000 (1.
    00%)
942
943 Epoch: 37
```

```
[    0/50000 (  0%)]  Loss: 4.6055
[20000/50000 ( 40%)]  Loss: 4.6047
[40000/50000 ( 80%)]  Loss: 4.6049
Accuracy: 0.88%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 38
[    0/50000 (  0%)]  Loss: 4.6050
[20000/50000 ( 40%)]  Loss: 4.6071
[40000/50000 ( 80%)]  Loss: 4.6087
Accuracy: 0.92%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 39
[    0/50000 (  0%)]  Loss: 4.6054
[20000/50000 ( 40%)]  Loss: 4.6073
[40000/50000 ( 80%)]  Loss: 4.6074
Accuracy: 0.95%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Epoch: 40
[    0/50000 (  0%)]  Loss: 4.6042
[20000/50000 ( 40%)]  Loss: 4.6073
[40000/50000 ( 80%)]  Loss: 4.6073
Accuracy: 0.91%

Average test loss: 4.6052  Accuracy:  100/10000 (1.00%)

Execution time: 10796.89 seconds
wandb: Waiting for W&B process to finish... (success).
wandb
    :
```

```
wandb:
wandb: Run history:
wandb:  test_f1_score
```

```
wandb:      test_loss
```

```
wandb: train_f1_score
```

```
wandb:     train_loss
```

```
wandb:
wandb: Run summary:
wandb:  test_f1_score 0.007
wandb:      test_loss 4604.86816
wandb: train_f1_score 0.01
wandb:     train_loss 4.60729
wandb:
wandb: Synced worthy-shape-1: https://wandb.ai/
    njmarko/gat0/runs/26qe2pmq
wandb: Synced 5 W&B file(s), 0 media file(s), 0
    artifact file(s) and 0 other file(s)
wandb: Find logs at: .\wandb\run-20220805_230153-
    26qe2pmq\logs

Process finished with exit code 0
```