ADAM Outcomes

DISEASE

Hyperbolicity Delta: 0

Mean Curvature: 0.9504
STDEV: 0.0045

Mean Test Accuracy: 0.9113
STDEV: 0.0123

FB15K

Hyperbolicity Delta: 1.5

Mean Curvature: 0.1320
STDEV: 0.0251

Mean Test Accuracy: 0.9434
STDEV: 0.0003

PUBMED

Hyperbolicity Delta: 3.5

Mean Curvature: 0.8188
STDEV: 0.0108

Mean Test Accuracy: 0.8611
STDEV: 0.0021

WORDNET

Hyperbolicity Delta: 5.5

MEAN Curvature: 0.0186
STDEV: 0.0041

Mean Test Accuracy: 0.7678
STDEV: 0.0146

SGD Outcomes

DISEASE

Hyperbolicity Delta: 0

Mean Curvature: 0.9953
STDEV: 0.0064

Mean Test Accuracy: 0.9142
STDEV: 0.0068

FB15K

Hyperbolicity Delta: 1.5

Mean Curvature: 0.0013
STDEV: 0.00002

Mean Test Accuracy: 0.3906
STDEV: 0.0064

PUBMED

Hyperbolicity Delta: 3.5

Mean Curvature: 0.8681
STDEV: 0.0

Mean Test Accuracy: 0.8576
STDEV: 0.0004

WORDNET

Hyperbolicity Delta: 5.5

MEAN Curvature: 0.2827
STDEV: 0.0153

Mean Test Accuracy: 0.4533
STDEV: 0.0016

MIXED Outcomes

DISEASE

Hyperbolicity Delta: 0

Mean Curvature: 0.9535
STDEV: 0.0013

Mean Test Accuracy: 0.9246
STDEV: 0.0088

FB15K

Hyperbolicity Delta: 1.5

Mean Curvature: 0.1299
STDEV: 0.0015

Mean Test Accuracy: 0.9422
STDEV: 0.0031

PUBMED

Hyperbolicity Delta: 3.5

Mean Curvature: 0.7403
STDEV: 0.0263

Mean Test Accuracy: 0.8648
STDEV: 0.0041

WORDNET

Hyperbolicity Delta: 5.5

MEAN Curvature: 0.0016
STDEV: 0.0001

Mean Test Accuracy: 0.7628
STDEV: 0.0061

Dataset: WORDNET

ADAM

lr = 1e-2
Starting Value for c: 1.0

95%|[redacted] | 950/1000 [07:11<00:22, 2.19it/s]Epoch 950: Train Loss=0.4970, Val Loss=0.7487, Val Acc=0.7590, Best Test Acc=0.7546, Curvature: 0.022858

89%|[redacted] | 1780/2000 [15:07<01:51, 1.97it/s]Epoch 1780: Train Loss=0.4143, Val Loss=0.6797, Val Acc=0.7856, Best Test Acc=0.7834, Curvature: 0.014595

67%|[redacted] | 1340/2000 [11:23<05:37, 1.95it/s]Epoch 1340: Train Loss=0.4464, Val Loss=0.7088, Val Acc=0.7764, Best Test Acc=0.7654, Curvature: 0.018448

SGD

lr = 1e-1
Starting Value for c: 1.0
54%|[redacted] | 540/1000 [04:05<03:29, 2.20it/s]Epoch 540: Train Loss=1.6993, Val Loss=1.7163, Val Acc=0.4585, Best Test Acc=0.4529, Curvature: 0.262198

47%|[redacted] | 470/1000 [04:00<04:29, 1.97it/s]Epoch 470: Train Loss=1.7132, Val Loss=1.7307, Val Acc=0.4589, Best Test Acc=0.4523, Curvature: 0.298547

82%|[redacted] | 490/600 [04:08<00:55, 1.97it/s]Epoch 490: Train Loss=1.7072, Val Loss=1.7241, Val Acc=0.4571, Best Test Acc=0.4547, Curvature: 0.287337

MIXED

Lr = 1e-2
Starting value for c: 1.0

61%|[redacted] | 920/1500 [07:49<04:53, 1.97it/s]Epoch 920: Train Loss=0.4237, Val Loss=0.7703, Val Acc=0.7684, Best Test Acc=0.7682, Curvature: 0.001552

40%|[redacted] | 603/1500 [07:18<04:83, 1.86it/s]Epoch 603: Train Loss=0.4562, Val Loss=0.6592, Val Acc=0.7514 Best Test Acc=0.7591, Curvature: 0.001672

57%|[redacted] | 854/1500 [07:65<04:91, 1.97it/s]Epoch 854: Train Loss=0.4835, Val Loss=0.7623, Val Acc=0.7459, Best Test Acc=0.7612, Curvature: 0.001494

Dataset: DISEASE

ADAM

Lr = 1e-4
Starting value for c: 1.0
44%|████▍ | 889/2000 [00:19<00:23, 47.01it/s]Epoch 880: Train Loss=0.2696, Val Loss=0.2690, Val Acc=0.9199, Best Test Acc=0.9150, Curvature: 0.949275

36%|███▌ | 715/2000 [00:15<00:28, 44.52it/s]Epoch 710: Train Loss=0.2914, Val Loss=0.2774, Val Acc=0.9262, Best Test Acc=0.9213, Curvature: 0.955362

48%|████▊ | 955/2000 [00:20<00:22, 45.53it/s]Epoch 950: Train Loss=0.2655, Val Loss=0.2537, Val Acc=0.9262, Best Test Acc=0.8975, Curvature: 0.946473

SGD

Lr = 1e-3
Starting value for c: 1.0
29%|██▊ | 578/2000 [00:11<00:28, 49.50it/s]Epoch 570: Train Loss=0.4652, Val Loss=0.4715, Val Acc=0.9036, Best Test Acc=0.9075, Curvature: 0.987574

19%|█▉ | 375/2000 [00:07<00:33, 48.84it/s]Epoch 370: Train Loss=0.5498, Val Loss=0.5486, Val Acc=0.9299, Best Test Acc=0.9137, Curvature: 0.998268

10%|▉ | 195/2000 [00:04<00:39, 45.79it/s]Epoch 190: Train Loss=0.6522, Val Loss=0.6544, Val Acc=0.9074, Best Test Acc=0.9213, Curvature: 1.000056

MIXED

lr=1e-4
Starting value for c=1.0

44%|████▍ | 875/2000 [00:19<00:24, 46.47it/s]Epoch 870: Train Loss=0.2702, Val Loss=0.2649, Val Acc=0.9287, Best Test Acc=0.9337, Curvature: 0.953668

38%|███▊ | 769/2000 [00:17<00:27, 44.54it/s]Epoch 760: Train Loss=0.2673, Val Loss=0.2812, Val Acc=0.9237, Best Test Acc=0.9237, Curvature: 0.955124

40%|████ | 808/2000 [00:18<00:27, 42.74it/s]Epoch 800: Train Loss=0.2913, Val Loss=0.2785, Val Acc=0.9212, Best Test Acc=0.9163, Curvature: 0.951799

Dataset: FB15k

ADAM

Lr = 1e-4
Starting value for c: 1.0

95%|▉| 3812/4000 [05:31<00:12, 14.56it/s]Epoch 3810: Train Loss=0.2882, Val Loss=0.1742, Val Acc=0.9457, Best Test Acc=0.9436, Curvature: 0.104358

93%|▉| 3712/4000 [04:16<00:19, 14.56it/s]Epoch 3710: Train Loss=0.3202, Val Loss=0.1729, Val Acc=0.9455, Best Test Acc=0.9435, Curvature: 0.153480

100%|▉| 4000/4000 [04:35<00:00, 14.54it/s]Epoch 4000: Train Loss=0.3131, Val Loss=0.1736, Val Acc=0.9446, Best Test Acc=0.9430, Curvature: 0.138047

SGD

Lr = 1e-1
Starting value for c: 1.0

100%|▉| 1991/2000 [04:20<00:01, 7.74it/s]Epoch 1990: Train Loss=2.8097, Val Loss=2.7943, Val Acc=0.3894, Best Test Acc=0.3962, Curvature: 0.001299

100%|▉| 2000/2000 [01:47<00:00, 18.67it/s]Epoch 2000: Train Loss=2.9484, Val Loss=2.9228, Val Acc=0.3494, Best Test Acc=0.3836, Curvature: 0.001338

100%|▉| 2000/2000 [02:05<00:00, 16.25it/s]Epoch 2001: Train Loss=2.8765, Val Loss=2.8502, Val Acc=0.3721, Best Test Acc=0.3920, Curvature: 0.001352

MIXED

lr=1e-3
Starting value for c= 1.0

96%|▉| 3822/4000 [03:23<00:09, 18.94it/s]Epoch 3820: Train Loss=0.3343, Val Loss=0.1845, Val Acc=0.9422, Best Test Acc=0.9385, Curvature: 0.130373

96%|▉| 3842/4000 [03:45<00:00, 19.23it/s]Epoch 3840: Train Loss=0.3287, Val Loss=0.1789, Val Acc=0.9475, Best Test Acc=0.9428, Curvature: 0.129847

100%|▉| 4000/4000 [03:50<00:00, 19.11it/s]Epoch 4000: Train Loss=0.3254, Val Loss=0.1756, Val Acc=0.9501, Best Test Acc=0.9453, Curvature: 0.127483

Dataset: Pubmed

ADAM

Lr = 1e-4

STARTING VALUE c = 0.1
15%|██ | 152/1000 [00:11<01:04, 13.24it/s]Epoch 150: Train Loss=0.3505, Val Loss=0.3582, Val Acc=0.8607, Best Test Acc=0.8555, Curvature: 0.115726

STARTING VALUE c = 1
48%|█████ | 482/1000 [00:36<00:39, 13.15it/s]Epoch 480: Train Loss=0.3425, Val Loss=0.3608, Val Acc=0.8582, Best Test Acc=0.8581, Curvature: 0.823976

31%|███ | 612/2000 [00:46<01:45, 13.20it/s]Epoch 610: Train Loss=0.3397, Val Loss=0.3616, Val Acc=0.8636, Best Test Acc=0.8623, Curvature: 0.803818

44%|████ | 442/1000 [00:33<00:42, 13.08it/s]Epoch 440: Train Loss=0.3459, Val Loss=0.3588, Val Acc=0.8630, Best Test Acc=0.8628, Curvature: 0.828744

SGD

Lr = 5e-2

STARTING VALUE c = 0.1
31%|███ | 312/1000 [00:23<00:51, 13.29it/s]Epoch 310: Train Loss=0.3604, Val Loss=0.3590, Val Acc=0.8615, Best Test Acc=0.8608, Curvature: 0.152606

STARTING VALUE c = 1
14%|█ | 142/1000 [00:10<01:05, 13.20it/s]Epoch 140: Train Loss=0.4064, Val Loss=0.4047, Val Acc=0.8564, Best Test Acc=0.8573, Curvature: 0.927041

98%|█████████| 492/500 [00:37<00:00, 13.26it/s]Epoch 490: Train Loss=0.3746, Val Loss=0.3704, Val Acc=0.8585, Best Test Acc=0.8573, Curvature: 0.822613

82%|███████ | 412/500 [00:31<00:06, 13.24it/s]Epoch 410: Train Loss=0.3786, Val Loss=0.3748, Val Acc=0.8591, Best Test Acc=0.8581, Curvature: 0.856672

MIXED

lr=1e-2

STARTING VALUE c = 0.1
100%|██████████| 1000/1000 [01:15<00:00, 13.20it/s]Epoch 1000: Train Loss=0.3384, Val Loss=0.3607, Val Acc=0.8607, Best Test Acc=0.8630, Curvature: 0.107742

STARTING VALUE c = 1
 69%|███████ | 692/1000 [00:52<00:23, 13.04it/s]Epoch 690: Train Loss=0.3391, Val Loss=0.3620, Val Acc=0.8594, Best Test Acc=0.8604, Curvature: 0.782965

 30%|███ | 152/500 [00:11<00:26, 13.24it/s]Epoch 150: Train Loss=0.3379, Val Loss=0.3482, Val Acc=0.8658, Best Test Acc=0.8664, Curvature: 0.709781

 18%|██ | 92/500 [00:07<00:31, 13.14it/s]Epoch 090: Train Loss=0.3453, Val Loss=0.3446, Val Acc=0.8682, Best Test Acc=0.8682, Curvature: 0.728202

DISEASE: BASELINE: ON GCN INSTEAD

ADAM

Lr = 1e-4

37%|████▏ | 372/1000 [00:44<00:56, 11.05it/s]Epoch 370: Train Loss=0.3410, Val Loss=0.3905, Val Acc=0.8473, Best Test Acc=0.8462

41%|████▋ | 411/1000 [00:41<00:52, 11.31it/s]Epoch 410: Train Loss=0.3236, Val Loss=0.4569, Val Acc=0.8310, Best Test Acc=0.8650

57%|██████▊ | 572/1000 [00:58<00:38, 11.11it/s]Epoch 570: Train Loss=0.3556, Val Loss=0.4249, Val Acc=0.8436, Best Test Acc=0.8575

MEAN: 0.85623333333
STDEV: 0.0095