Class distribution of id:0
/usr/local/lib/python3.10/dist-packages/torchvision/transforms/functional.py:1603: UserWarning: The default value of the antialias parameter of all the resizing transforms (Resize(), RandomResizedCrop(), etc.) will change from None to True in
 warnings.warn(
  train [1988, 1997, 2028, 1995, 2006, 2025, 1981, 1936, 2021, 2023]
  test [326, 315, 339, 319, 339, 341, 356, 336, 324, 338]
Class distribution of id:1
  train [2011, 2021, 2014, 2016, 2003, 1957, 2009, 2026, 2005, 1938]
  test [333, 358, 331, 324, 324, 339, 322, 336, 341, 325]
Class distribution of id:2
  train [2001, 1982, 1958, 1989, 1991, 2018, 2010, 2038, 1974, 2039]
  test [341, 327, 330, 357, 336, 320, 322, 328, 335, 337]
 | Client id:0 | Test_Loss: 2.303 | Test_Acc: 8.731
 | Global Round : 1/30 | Client id:0 | Local Epoch : 1/5 | Train_Loss: 0.746 | Train_Acc: 73.125
 | Global Round : 1/30 | Client id:0 | Local Epoch : 2/5 | Train_Loss: 0.422 | Train_Acc: 84.385
 | Global Round : 1/30 | Client id:0 | Local Epoch : 3/5 | Train_Loss: 0.365 | Train_Acc: 86.550
 | Global Round : 1/30 | Client id:0 | Local Epoch : 4/5 | Train_Loss: 0.328 | Train_Acc: 87.885
 | Global Round : 1/30 | Client id:0 | Local Epoch : 5/5 | Train_Loss: 0.299 | Train_Acc: 88.770
 | Client id:1 | Test_Loss: 2.302 | Test_Acc: 9.751
 | Global Round : 1/30 | Client id:1 | Local Epoch : 1/5 | Train_Loss: 0.770 | Train_Acc: 72.245
 | Global Round : 1/30 | Client id:1 | Local Epoch : 2/5 | Train_Loss: 0.439 | Train_Acc: 83.760
 | Global Round : 1/30 | Client id:1 | Local Epoch : 3/5 | Train_Loss: 0.375 | Train_Acc: 86.175
 | Global Round : 1/30 | Client id:1 | Local Epoch : 4/5 | Train_Loss: 0.338 | Train_Acc: 87.475
 | Global Round : 1/30 | Client id:1 | Local Epoch : 5/5 | Train_Loss: 0.312 | Train_Acc: 88.185
 | Client id:2 | Test_Loss: 2.303 | Test_Acc: 9.091
 | Global Round : 1/30 | Client id:2 | Local Epoch : 1/5 | Train_Loss: 0.729 | Train_Acc: 73.730
 | Global Round : 1/30 | Client id:2 | Local Epoch : 2/5 | Train_Loss: 0.411 | Train_Acc: 84.745
 | Global Round : 1/30 | Client id:2 | Local Epoch : 3/5 | Train_Loss: 0.350 | Train_Acc: 87.095
 | Global Round : 1/30 | Client id:2 | Local Epoch : 4/5 | Train_Loss: 0.315 | Train_Acc: 88.260
 | Global Round : 1/30 | Client id:2 | Local Epoch : 5/5 | Train_Loss: 0.284 | Train_Acc: 89.325
aggregating weights...
lambda: tensor([0.3333, 0.3333, 0.3333])
 | Client id:0 | Test_Loss: 0.423 | Test_Acc: 86.229
 | Global Round : 2/30 | Client id:0 | Local Epoch : 1/5 | Train_Loss: 0.328 | Train_Acc: 87.800
 | Global Round : 2/30 | Client id:0 | Local Epoch : 2/5 | Train_Loss: 0.290 | Train_Acc: 89.215
 | Global Round : 2/30 | Client id:0 | Local Epoch : 3/5 | Train_Loss: 0.266 | Train_Acc: 89.880
 | Global Round : 2/30 | Client id:0 | Local Epoch : 4/5 | Train_Loss: 0.240 | Train_Acc: 91.265
 | Global Round : 2/30 | Client id:0 | Local Epoch : 5/5 | Train_Loss: 0.220 | Train_Acc: 91.835
 | Client id:1 | Test_Loss: 0.430 | Test_Acc: 86.049
 | Global Round : 2/30 | Client id:1 | Local Epoch : 1/5 | Train_Loss: 0.339 | Train_Acc: 87.415
 | Global Round : 2/30 | Client id:1 | Local Epoch : 2/5 | Train_Loss: 0.295 | Train_Acc: 89.160
 | Global Round : 2/30 | Client id:1 | Local Epoch : 3/5 | Train_Loss: 0.265 | Train_Acc: 90.200
 | Global Round : 2/30 | Client id:1 | Local Epoch : 4/5 | Train_Loss: 0.246 | Train_Acc: 90.770
 | Global Round : 2/30 | Client id:1 | Local Epoch : 5/5 | Train_Loss: 0.219 | Train_Acc: 91.625
 | Client id:2 | Test_Loss: 0.435 | Test_Acc: 85.359

 | Global Round : 2/30 | Client id:1 | Local Epoch : 4/5 | Train_Loss: 0.246 | Train_Acc: 90.770
 | Global Round : 2/30 | Client id:1 | Local Epoch : 5/5 | Train_Loss: 0.219 | Train_Acc: 91.625
 | Client id:2 | Test_Loss: 0.435 | Test_Acc: 85.359
 | Global Round : 2/30 | Client id:2 | Local Epoch : 1/5 | Train_Loss: 0.313 | Train_Acc: 88.420
 | Global Round : 2/30 | Client id:2 | Local Epoch : 2/5 | Train_Loss: 0.273 | Train_Acc: 89.980
 | Global Round : 2/30 | Client id:2 | Local Epoch : 3/5 | Train_Loss: 0.246 | Train_Acc: 90.770
 | Global Round : 2/30 | Client id:2 | Local Epoch : 4/5 | Train_Loss: 0.219 | Train_Acc: 91.640
 | Global Round : 2/30 | Client id:2 | Local Epoch : 5/5 | Train_Loss: 0.200 | Train_Acc: 92.380
aggregating weights...
lambda: tensor([0.3333, 0.3333, 0.3334])
 | Client id:0 | Test_Loss: 0.273 | Test_Acc: 90.309
 | Global Round : 3/30 | Client id:0 | Local Epoch : 1/5 | Train_Loss: 0.250 | Train_Acc: 90.800
 | Global Round : 3/30 | Client id:0 | Local Epoch : 2/5 | Train_Loss: 0.218 | Train_Acc: 91.930
 | Global Round : 3/30 | Client id:0 | Local Epoch : 3/5 | Train_Loss: 0.197 | Train_Acc: 92.795
 | Global Round : 3/30 | Client id:0 | Local Epoch : 4/5 | Train_Loss: 0.170 | Train_Acc: 93.670
 | Global Round : 3/30 | Client id:0 | Local Epoch : 5/5 | Train_Loss: 0.159 | Train_Acc: 93.855
 | Client id:1 | Test_Loss: 0.287 | Test_Acc: 89.679
 | Global Round : 3/30 | Client id:1 | Local Epoch : 1/5 | Train_Loss: 0.259 | Train_Acc: 90.360
 | Global Round : 3/30 | Client id:1 | Local Epoch : 2/5 | Train_Loss: 0.220 | Train_Acc: 91.865
 | Global Round : 3/30 | Client id:1 | Local Epoch : 3/5 | Train_Loss: 0.195 | Train_Acc: 92.935
 | Global Round : 3/30 | Client id:1 | Local Epoch : 4/5 | Train_Loss: 0.174 | Train_Acc: 93.490
 | Global Round : 3/30 | Client id:1 | Local Epoch : 5/5 | Train_Loss: 0.153 | Train_Acc: 94.380
 | Client id:2 | Test_Loss: 0.280 | Test_Acc: 89.499
 | Global Round : 3/30 | Client id:2 | Local Epoch : 1/5 | Train_Loss: 0.232 | Train_Acc: 91.245
 | Global Round : 3/30 | Client id:2 | Local Epoch : 2/5 | Train_Loss: 0.203 | Train_Acc: 92.440
 | Global Round : 3/30 | Client id:2 | Local Epoch : 3/5 | Train_Loss: 0.174 | Train_Acc: 93.395
 | Global Round : 3/30 | Client id:2 | Local Epoch : 4/5 | Train_Loss: 0.158 | Train_Acc: 94.150
 | Global Round : 3/30 | Client id:2 | Local Epoch : 5/5 | Train_Loss: 0.143 | Train_Acc: 94.575
aggregating weights...
lambda: tensor([0.3332, 0.3334, 0.3334])
 | Client id:0 | Test_Loss: 0.244 | Test_Acc: 91.359
 | Global Round : 4/30 | Client id:0 | Local Epoch : 1/5 | Train_Loss: 0.208 | Train_Acc: 92.300
 | Global Round : 4/30 | Client id:0 | Local Epoch : 2/5 | Train_Loss: 0.170 | Train_Acc: 93.525
 | Global Round : 4/30 | Client id:0 | Local Epoch : 3/5 | Train_Loss: 0.142 | Train_Acc: 94.780
 | Global Round : 4/30 | Client id:0 | Local Epoch : 4/5 | Train_Loss: 0.124 | Train_Acc: 95.460
 | Global Round : 4/30 | Client id:0 | Local Epoch : 5/5 | Train_Loss: 0.109 | Train_Acc: 95.960
 | Client id:1 | Test_Loss: 0.280 | Test_Acc: 90.639
 | Global Round : 4/30 | Client id:1 | Local Epoch : 1/5 | Train_Loss: 0.209 | Train_Acc: 92.060
 | Global Round : 4/30 | Client id:1 | Local Epoch : 2/5 | Train_Loss: 0.169 | Train_Acc: 93.600
 | Global Round : 4/30 | Client id:1 | Local Epoch : 3/5 | Train_Loss: 0.142 | Train_Acc: 94.730
 | Global Round : 4/30 | Client id:1 | Local Epoch : 4/5 | Train_Loss: 0.122 | Train_Acc: 95.555
 | Global Round : 4/30 | Client id:1 | Local Epoch : 5/5 | Train_Loss: 0.105 | Train_Acc: 96.155
 | Client id:2 | Test_Loss: 0.257 | Test_Acc: 90.489
 | Global Round : 4/30 | Client id:2 | Local Epoch : 1/5 | Train_Loss: 0.187 | Train_Acc: 92.920

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid
| Global Round : 4/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.122 | Train_Acc: 95.555
| Global Round : 4/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.105 | Train_Acc: 96.155
| Client id:2 | Test_Loss: 0.257 | Test_Acc: 90.489
| Global Round : 4/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.187 | Train_Acc: 92.920
| Global Round : 4/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.157 | Train_Acc: 93.990
| Global Round : 4/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.131 | Train_Acc: 95.030
| Global Round : 4/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.111 | Train_Acc: 95.745
| Global Round : 4/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.095 | Train_Acc: 96.465
aggregating weights...
lambda: tensor([0.3330, 0.3336, 0.3334])
| Client id:0 | Test_Loss: 0.246 | Test_Acc: 91.959
| Global Round : 5/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.177 | Train_Acc: 93.315
| Global Round : 5/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.129 | Train_Acc: 95.275
| Global Round : 5/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.107 | Train_Acc: 96.050
| Global Round : 5/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.091 | Train_Acc: 96.550
| Global Round : 5/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.071 | Train_Acc: 97.420
| Client id:1 | Test_Loss: 0.286 | Test_Acc: 91.209
| Global Round : 5/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.175 | Train_Acc: 93.385
| Global Round : 5/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.125 | Train_Acc: 95.310
| Global Round : 5/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.104 | Train_Acc: 96.125
| Global Round : 5/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.086 | Train_Acc: 96.875
| Global Round : 5/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.074 | Train_Acc: 97.320
| Client id:2 | Test_Loss: 0.256 | Test_Acc: 90.999
| Global Round : 5/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.162 | Train_Acc: 93.725
| Global Round : 5/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.115 | Train_Acc: 95.700
| Global Round : 5/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.095 | Train_Acc: 96.435
| Global Round : 5/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.076 | Train_Acc: 97.320
| Global Round : 5/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.067 | Train_Acc: 97.555
aggregating weights...
lambda: tensor([0.3329, 0.3338, 0.3333])
| Client id:0 | Test_Loss: 0.263 | Test_Acc: 91.869
| Global Round : 6/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.153 | Train_Acc: 94.305
| Global Round : 6/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.105 | Train_Acc: 96.145
| Global Round : 6/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.080 | Train_Acc: 96.985
| Global Round : 6/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.066 | Train_Acc: 97.575
| Global Round : 6/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.052 | Train_Acc: 98.145
| Client id:1 | Test_Loss: 0.298 | Test_Acc: 91.059
| Global Round : 6/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.147 | Train_Acc: 94.605
| Global Round : 6/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.106 | Train_Acc: 96.065
| Global Round : 6/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.077 | Train_Acc: 97.165
| Global Round : 6/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.072 | Train_Acc: 97.460
| Global Round : 6/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.058 | Train_Acc: 98.025
| Client id:2 | Test_Loss: 0.270 | Test_Acc: 91.359
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid
| Global Round : 6/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.058 | Train_Acc: 98.025
| Client id:2 | Test_Loss: 0.270 | Test_Acc: 91.359
| Global Round : 6/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.138 | Train_Acc: 94.560
| Global Round : 6/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.093 | Train_Acc: 96.605
| Global Round : 6/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.070 | Train_Acc: 97.475
| Global Round : 6/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.060 | Train_Acc: 97.915
| Global Round : 6/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.046 | Train_Acc: 98.560
aggregating weights...
lambda: tensor([0.3327, 0.3341, 0.3332])
| Client id:0 | Test_Loss: 0.276 | Test_Acc: 91.779
| Global Round : 7/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.129 | Train_Acc: 95.090
| Global Round : 7/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.087 | Train_Acc: 96.860
| Global Round : 7/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.070 | Train_Acc: 97.605
| Global Round : 7/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.050 | Train_Acc: 98.250
| Global Round : 7/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.043 | Train_Acc: 98.535
| Client id:1 | Test_Loss: 0.324 | Test_Acc: 91.239
| Global Round : 7/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.130 | Train_Acc: 94.925
| Global Round : 7/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.086 | Train_Acc: 96.875
| Global Round : 7/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.061 | Train_Acc: 97.750
| Global Round : 7/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.050 | Train_Acc: 98.130
| Global Round : 7/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.050 | Train_Acc: 98.340
| Client id:2 | Test_Loss: 0.281 | Test_Acc: 91.179
| Global Round : 7/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.120 | Train_Acc: 95.560
| Global Round : 7/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.080 | Train_Acc: 97.090
| Global Round : 7/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.057 | Train_Acc: 97.950
| Global Round : 7/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.047 | Train_Acc: 98.360
| Global Round : 7/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.039 | Train_Acc: 98.645
aggregating weights...
lambda: tensor([0.3325, 0.3344, 0.3331])
| Client id:0 | Test_Loss: 0.284 | Test_Acc: 92.589
| Global Round : 8/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.119 | Train_Acc: 95.480
| Global Round : 8/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.075 | Train_Acc: 97.245
| Global Round : 8/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.057 | Train_Acc: 97.890
| Global Round : 8/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.044 | Train_Acc: 98.535
| Global Round : 8/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.036 | Train_Acc: 98.845
| Client id:1 | Test_Loss: 0.343 | Test_Acc: 90.789
| Global Round : 8/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.116 | Train_Acc: 95.715
| Global Round : 8/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.072 | Train_Acc: 97.370
| Global Round : 8/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.057 | Train_Acc: 97.995
| Global Round : 8/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.040 | Train_Acc: 98.615
| Global Round : 8/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.031 | Train_Acc: 99.010
| Client id:2 | Test_Loss: 0.301 | Test_Acc: 91.149
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid
 | Client id:2 | Test_Loss: 0.301 | Test_Acc: 91.149
 | Global Round : 8/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.107 | Train_Acc: 96.035
 | Global Round : 8/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.066 | Train_Acc: 97.680
 | Global Round : 8/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.051 | Train_Acc: 98.185
 | Global Round : 8/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.042 | Train_Acc: 98.565
 | Global Round : 8/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.026 | Train_Acc: 99.130
aggregating weights...
lambda: tensor([0.3323, 0.3347, 0.3330])
 | Client id:0 | Test_Loss: 0.301 | Test_Acc: 91.809
 | Global Round : 9/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.101 | Train_Acc: 96.175
 | Global Round : 9/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.066 | Train_Acc: 97.705
 | Global Round : 9/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.043 | Train_Acc: 98.385
 | Global Round : 9/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.043 | Train_Acc: 98.550
 | Global Round : 9/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.028 | Train_Acc: 99.115
 | Client id:1 | Test_Loss: 0.352 | Test_Acc: 90.729
 | Global Round : 9/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.103 | Train_Acc: 96.260
 | Global Round : 9/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.060 | Train_Acc: 97.840
 | Global Round : 9/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.050 | Train_Acc: 98.235
 | Global Round : 9/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.037 | Train_Acc: 98.705
 | Global Round : 9/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.034 | Train_Acc: 98.905
 | Client id:2 | Test_Loss: 0.300 | Test_Acc: 91.209
 | Global Round : 9/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.096 | Train_Acc: 96.625
 | Global Round : 9/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.063 | Train_Acc: 97.745
 | Global Round : 9/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.044 | Train_Acc: 98.420
 | Global Round : 9/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.029 | Train_Acc: 99.035
 | Global Round : 9/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.028 | Train_Acc: 99.090
aggregating weights...
lambda: tensor([0.3321, 0.3350, 0.3328])
 | Client id:0 | Test_Loss: 0.287 | Test_Acc: 92.319
 | Global Round : 10/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.095 | Train_Acc: 96.450
 | Global Round : 10/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.061 | Train_Acc: 97.830
 | Global Round : 10/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.041 | Train_Acc: 98.575
 | Global Round : 10/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.031 | Train_Acc: 99.000
 | Global Round : 10/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.025 | Train_Acc: 99.175
 | Client id:1 | Test_Loss: 0.346 | Test_Acc: 90.999
 | Global Round : 10/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.090 | Train_Acc: 96.775
 | Global Round : 10/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.060 | Train_Acc: 97.790
 | Global Round : 10/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.047 | Train_Acc: 98.330
 | Global Round : 10/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.033 | Train_Acc: 98.885
 | Global Round : 10/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.021 | Train_Acc: 99.360
 | Client id:2 | Test_Loss: 0.290 | Test_Acc: 91.989
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid
```
```
| Client id:2 | Test_Loss: 0.290 | Test_Acc: 91.989
| Global Round : 10/30 | Client id:2 | Local Epoch : 1/5 |  Train_Loss: 0.086 | Train_Acc: 96.710
| Global Round : 10/30 | Client id:2 | Local Epoch : 2/5 |  Train_Loss: 0.056 | Train_Acc: 97.990
| Global Round : 10/30 | Client id:2 | Local Epoch : 3/5 |  Train_Loss: 0.034 | Train_Acc: 98.855
| Global Round : 10/30 | Client id:2 | Local Epoch : 4/5 |  Train_Loss: 0.029 | Train_Acc: 99.000
| Global Round : 10/30 | Client id:2 | Local Epoch : 5/5 |  Train_Loss: 0.022 | Train_Acc: 99.275
aggregating weights...
lambda: tensor([0.3319, 0.3354, 0.3327])
| Client id:0 | Test_Loss: 0.298 | Test_Acc: 92.199
| Global Round : 11/30 | Client id:0 | Local Epoch : 1/5 |  Train_Loss: 0.084 | Train_Acc: 96.900
| Global Round : 11/30 | Client id:0 | Local Epoch : 2/5 |  Train_Loss: 0.055 | Train_Acc: 98.005
| Global Round : 11/30 | Client id:0 | Local Epoch : 3/5 |  Train_Loss: 0.042 | Train_Acc: 98.545
| Global Round : 11/30 | Client id:0 | Local Epoch : 4/5 |  Train_Loss: 0.025 | Train_Acc: 99.200
| Global Round : 11/30 | Client id:0 | Local Epoch : 5/5 |  Train_Loss: 0.020 | Train_Acc: 99.390
| Client id:1 | Test_Loss: 0.357 | Test_Acc: 90.759
| Global Round : 11/30 | Client id:1 | Local Epoch : 1/5 |  Train_Loss: 0.082 | Train_Acc: 97.000
| Global Round : 11/30 | Client id:1 | Local Epoch : 2/5 |  Train_Loss: 0.051 | Train_Acc: 98.165
| Global Round : 11/30 | Client id:1 | Local Epoch : 3/5 |  Train_Loss: 0.039 | Train_Acc: 98.555
| Global Round : 11/30 | Client id:1 | Local Epoch : 4/5 |  Train_Loss: 0.029 | Train_Acc: 99.020
| Global Round : 11/30 | Client id:1 | Local Epoch : 5/5 |  Train_Loss: 0.024 | Train_Acc: 99.270
| Client id:2 | Test_Loss: 0.301 | Test_Acc: 91.569
| Global Round : 11/30 | Client id:2 | Local Epoch : 1/5 |  Train_Loss: 0.077 | Train_Acc: 97.140
| Global Round : 11/30 | Client id:2 | Local Epoch : 2/5 |  Train_Loss: 0.049 | Train_Acc: 98.250
| Global Round : 11/30 | Client id:2 | Local Epoch : 3/5 |  Train_Loss: 0.032 | Train_Acc: 98.965
| Global Round : 11/30 | Client id:2 | Local Epoch : 4/5 |  Train_Loss: 0.029 | Train_Acc: 98.975
| Global Round : 11/30 | Client id:2 | Local Epoch : 5/5 |  Train_Loss: 0.023 | Train_Acc: 99.255
aggregating weights...
lambda: tensor([0.3317, 0.3358, 0.3325])
| Client id:0 | Test_Loss: 0.291 | Test_Acc: 92.859
| Global Round : 12/30 | Client id:0 | Local Epoch : 1/5 |  Train_Loss: 0.080 | Train_Acc: 97.090
| Global Round : 12/30 | Client id:0 | Local Epoch : 2/5 |  Train_Loss: 0.048 | Train_Acc: 98.375
| Global Round : 12/30 | Client id:0 | Local Epoch : 3/5 |  Train_Loss: 0.042 | Train_Acc: 98.480
| Global Round : 12/30 | Client id:0 | Local Epoch : 4/5 |  Train_Loss: 0.027 | Train_Acc: 99.195
| Global Round : 12/30 | Client id:0 | Local Epoch : 5/5 |  Train_Loss: 0.019 | Train_Acc: 99.445
| Client id:1 | Test_Loss: 0.369 | Test_Acc: 90.939
| Global Round : 12/30 | Client id:1 | Local Epoch : 1/5 |  Train_Loss: 0.071 | Train_Acc: 97.420
| Global Round : 12/30 | Client id:1 | Local Epoch : 2/5 |  Train_Loss: 0.044 | Train_Acc: 98.540
| Global Round : 12/30 | Client id:1 | Local Epoch : 3/5 |  Train_Loss: 0.036 | Train_Acc: 98.825
| Global Round : 12/30 | Client id:1 | Local Epoch : 4/5 |  Train_Loss: 0.024 | Train_Acc: 99.260
| Global Round : 12/30 | Client id:1 | Local Epoch : 5/5 |  Train_Loss: 0.019 | Train_Acc: 99.435
| Client id:2 | Test_Loss: 0.300 | Test_Acc: 91.689
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid
| Global Round : 12/30 | Client id:1 | Local Epoch : 5/5 |  Train_Loss: 0.015 | Train_Acc: 99.455
| Client id:2 | Test_Loss: 0.300 | Test_Acc: 91.689
| Global Round : 12/30 | Client id:2 | Local Epoch : 1/5 |  Train_Loss: 0.071 | Train_Acc: 97.410
| Global Round : 12/30 | Client id:2 | Local Epoch : 2/5 |  Train_Loss: 0.041 | Train_Acc: 98.590
| Global Round : 12/30 | Client id:2 | Local Epoch : 3/5 |  Train_Loss: 0.032 | Train_Acc: 98.950
| Global Round : 12/30 | Client id:2 | Local Epoch : 4/5 |  Train_Loss: 0.027 | Train_Acc: 99.065
| Global Round : 12/30 | Client id:2 | Local Epoch : 5/5 |  Train_Loss: 0.015 | Train_Acc: 99.575
aggregating weights...
lambda: tensor([0.3314, 0.3363, 0.3323])
| Client id:0 | Test_Loss: 0.313 | Test_Acc: 92.559
| Global Round : 13/30 | Client id:0 | Local Epoch : 1/5 |  Train_Loss: 0.074 | Train_Acc: 97.210
| Global Round : 13/30 | Client id:0 | Local Epoch : 2/5 |  Train_Loss: 0.049 | Train_Acc: 98.335
| Global Round : 13/30 | Client id:0 | Local Epoch : 3/5 |  Train_Loss: 0.033 | Train_Acc: 98.985
| Global Round : 13/30 | Client id:0 | Local Epoch : 4/5 |  Train_Loss: 0.027 | Train_Acc: 99.160
| Global Round : 13/30 | Client id:0 | Local Epoch : 5/5 |  Train_Loss: 0.015 | Train_Acc: 99.605
| Client id:1 | Test_Loss: 0.387 | Test_Acc: 91.089
| Global Round : 13/30 | Client id:1 | Local Epoch : 1/5 |  Train_Loss: 0.073 | Train_Acc: 97.410
| Global Round : 13/30 | Client id:1 | Local Epoch : 2/5 |  Train_Loss: 0.044 | Train_Acc: 98.575
| Global Round : 13/30 | Client id:1 | Local Epoch : 3/5 |  Train_Loss: 0.033 | Train_Acc: 98.895
| Global Round : 13/30 | Client id:1 | Local Epoch : 4/5 |  Train_Loss: 0.025 | Train_Acc: 99.190
| Global Round : 13/30 | Client id:1 | Local Epoch : 5/5 |  Train_Loss: 0.021 | Train_Acc: 99.370
| Client id:2 | Test_Loss: 0.305 | Test_Acc: 91.629
| Global Round : 13/30 | Client id:2 | Local Epoch : 1/5 |  Train_Loss: 0.080 | Train_Acc: 97.025
| Global Round : 13/30 | Client id:2 | Local Epoch : 2/5 |  Train_Loss: 0.044 | Train_Acc: 98.490
| Global Round : 13/30 | Client id:2 | Local Epoch : 3/5 |  Train_Loss: 0.033 | Train_Acc: 99.010
| Global Round : 13/30 | Client id:2 | Local Epoch : 4/5 |  Train_Loss: 0.023 | Train_Acc: 99.215
| Global Round : 13/30 | Client id:2 | Local Epoch : 5/5 |  Train_Loss: 0.013 | Train_Acc: 99.610
aggregating weights...
lambda: tensor([0.3312, 0.3368, 0.3320])
| Client id:0 | Test_Loss: 0.302 | Test_Acc: 92.319
| Global Round : 14/30 | Client id:0 | Local Epoch : 1/5 |  Train_Loss: 0.071 | Train_Acc: 97.350
| Global Round : 14/30 | Client id:0 | Local Epoch : 2/5 |  Train_Loss: 0.042 | Train_Acc: 98.555
| Global Round : 14/30 | Client id:0 | Local Epoch : 3/5 |  Train_Loss: 0.032 | Train_Acc: 99.015
| Global Round : 14/30 | Client id:0 | Local Epoch : 4/5 |  Train_Loss: 0.018 | Train_Acc: 99.470
| Global Round : 14/30 | Client id:0 | Local Epoch : 5/5 |  Train_Loss: 0.010 | Train_Acc: 99.770
| Client id:1 | Test_Loss: 0.365 | Test_Acc: 91.299
| Global Round : 14/30 | Client id:1 | Local Epoch : 1/5 |  Train_Loss: 0.066 | Train_Acc: 97.680
| Global Round : 14/30 | Client id:1 | Local Epoch : 2/5 |  Train_Loss: 0.042 | Train_Acc: 98.650
| Global Round : 14/30 | Client id:1 | Local Epoch : 3/5 |  Train_Loss: 0.034 | Train_Acc: 98.920
| Global Round : 14/30 | Client id:1 | Local Epoch : 4/5 |  Train_Loss: 0.024 | Train_Acc: 99.255
| Global Round : 14/30 | Client id:1 | Local Epoch : 5/5 |  Train_Loss: 0.021 | Train_Acc: 99.350
| Client id:2 | Test_Loss: 0.307 | Test_Acc: 91.569
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid
 | Client id:2 | Test_Loss: 0.307 | Test_Acc: 91.569
 | Global Round : 14/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.064 | Train_Acc: 97.770
 | Global Round : 14/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.044 | Train_Acc: 98.530
 | Global Round : 14/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.033 | Train_Acc: 98.840
 | Global Round : 14/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.024 | Train_Acc: 99.290
 | Global Round : 14/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.019 | Train_Acc: 99.425
aggregating weights...
lambda: tensor([0.3310, 0.3372, 0.3318])
 | Client id:0 | Test_Loss: 0.306 | Test_Acc: 92.289
 | Global Round : 15/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.074 | Train_Acc: 97.265
 | Global Round : 15/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.047 | Train_Acc: 98.330
 | Global Round : 15/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.031 | Train_Acc: 99.025
 | Global Round : 15/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.019 | Train_Acc: 99.420
 | Global Round : 15/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.675
 | Client id:1 | Test_Loss: 0.379 | Test_Acc: 91.269
 | Global Round : 15/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.062 | Train_Acc: 97.740
 | Global Round : 15/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.048 | Train_Acc: 98.290
 | Global Round : 15/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.031 | Train_Acc: 99.045
 | Global Round : 15/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.015 | Train_Acc: 99.645
 | Global Round : 15/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.007 | Train_Acc: 99.870
 | Client id:2 | Test_Loss: 0.303 | Test_Acc: 91.659
 | Global Round : 15/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.074 | Train_Acc: 97.360
 | Global Round : 15/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.042 | Train_Acc: 98.495
 | Global Round : 15/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.028 | Train_Acc: 99.095
 | Global Round : 15/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.015 | Train_Acc: 99.590
 | Global Round : 15/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.605
aggregating weights...
lambda: tensor([0.3307, 0.3377, 0.3315])
 | Client id:0 | Test_Loss: 0.301 | Test_Acc: 93.039
 | Global Round : 16/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.068 | Train_Acc: 97.595
 | Global Round : 16/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.051 | Train_Acc: 98.200
 | Global Round : 16/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.031 | Train_Acc: 99.015
 | Global Round : 16/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.028 | Train_Acc: 99.115
 | Global Round : 16/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.025 | Train_Acc: 99.235
 | Client id:1 | Test_Loss: 0.383 | Test_Acc: 91.419
 | Global Round : 16/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.058 | Train_Acc: 97.980
 | Global Round : 16/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.043 | Train_Acc: 98.520
 | Global Round : 16/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.032 | Train_Acc: 98.990
 | Global Round : 16/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.024 | Train_Acc: 99.355
 | Global Round : 16/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.019 | Train_Acc: 99.405
 | Client id:2 | Test_Loss: 0.317 | Test_Acc: 91.539
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid

| Client id:2 | Test_Loss: 0.317 | Test_Acc: 91.539
| Global Round : 16/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.060 | Train_Acc: 97.830
| Global Round : 16/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.045 | Train_Acc: 98.465
| Global Round : 16/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.030 | Train_Acc: 99.050
| Global Round : 16/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.019 | Train_Acc: 99.495
| Global Round : 16/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.011 | Train_Acc: 99.715
aggregating weights...
lambda: tensor([0.3304, 0.3382, 0.3314])
| Client id:0 | Test_Loss: 0.308 | Test_Acc: 92.259
| Global Round : 17/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.059 | Train_Acc: 97.890
| Global Round : 17/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.043 | Train_Acc: 98.550
| Global Round : 17/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.027 | Train_Acc: 99.245
| Global Round : 17/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.022 | Train_Acc: 99.370
| Global Round : 17/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.015 | Train_Acc: 99.585
| Client id:1 | Test_Loss: 0.376 | Test_Acc: 90.699
| Global Round : 17/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.061 | Train_Acc: 97.850
| Global Round : 17/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.042 | Train_Acc: 98.630
| Global Round : 17/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.028 | Train_Acc: 99.120
| Global Round : 17/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.021 | Train_Acc: 99.385
| Global Round : 17/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.017 | Train_Acc: 99.575
| Client id:2 | Test_Loss: 0.319 | Test_Acc: 91.809
| Global Round : 17/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.060 | Train_Acc: 97.865
| Global Round : 17/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.035 | Train_Acc: 98.875
| Global Round : 17/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.023 | Train_Acc: 99.340
| Global Round : 17/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.023 | Train_Acc: 99.310
| Global Round : 17/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.014 | Train_Acc: 99.635
aggregating weights...
lambda: tensor([0.3302, 0.3386, 0.3312])
| Client id:0 | Test_Loss: 0.296 | Test_Acc: 92.859
| Global Round : 18/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.063 | Train_Acc: 97.775
| Global Round : 18/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.041 | Train_Acc: 98.590
| Global Round : 18/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.030 | Train_Acc: 98.980
| Global Round : 18/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.016 | Train_Acc: 99.625
| Global Round : 18/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.011 | Train_Acc: 99.765
| Client id:1 | Test_Loss: 0.375 | Test_Acc: 90.879
| Global Round : 18/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.059 | Train_Acc: 97.920
| Global Round : 18/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.044 | Train_Acc: 98.550
| Global Round : 18/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.033 | Train_Acc: 99.005
| Global Round : 18/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.023 | Train_Acc: 99.265
| Global Round : 18/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.690
| Client id:2 | Test_Loss: 0.321 | Test_Acc: 91.839
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid

| Client id:2 | Test_Loss: 0.321 | Test_Acc: 91.839
| Global Round : 18/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.062 | Train_Acc: 97.820
| Global Round : 18/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.043 | Train_Acc: 98.525
| Global Round : 18/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.031 | Train_Acc: 98.970
| Global Round : 18/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.017 | Train_Acc: 99.535
| Global Round : 18/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.011 | Train_Acc: 99.725
aggregating weights...
lambda: tensor([0.3298, 0.3391, 0.3311])
| Client id:0 | Test_Loss: 0.297 | Test_Acc: 92.529
| Global Round : 19/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.058 | Train_Acc: 97.990
| Global Round : 19/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.050 | Train_Acc: 98.300
| Global Round : 19/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.033 | Train_Acc: 98.835
| Global Round : 19/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.025 | Train_Acc: 99.200
| Global Round : 19/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.015 | Train_Acc: 99.620
| Client id:1 | Test_Loss: 0.365 | Test_Acc: 91.089
| Global Round : 19/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.056 | Train_Acc: 98.015
| Global Round : 19/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.042 | Train_Acc: 98.585
| Global Round : 19/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.030 | Train_Acc: 98.965
| Global Round : 19/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.023 | Train_Acc: 99.315
| Global Round : 19/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.015 | Train_Acc: 99.615
| Client id:2 | Test_Loss: 0.292 | Test_Acc: 91.779
| Global Round : 19/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.055 | Train_Acc: 98.130
| Global Round : 19/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.038 | Train_Acc: 98.800
| Global Round : 19/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.026 | Train_Acc: 99.220
| Global Round : 19/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.018 | Train_Acc: 99.560
| Global Round : 19/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.008 | Train_Acc: 99.850
aggregating weights...
lambda: tensor([0.3296, 0.3395, 0.3309])
| Client id:0 | Test_Loss: 0.305 | Test_Acc: 92.499
| Global Round : 20/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.056 | Train_Acc: 98.040
| Global Round : 20/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.047 | Train_Acc: 98.445
| Global Round : 20/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.028 | Train_Acc: 99.085
| Global Round : 20/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.013 | Train_Acc: 99.725
| Global Round : 20/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.006 | Train_Acc: 99.895
| Client id:1 | Test_Loss: 0.374 | Test_Acc: 91.089
| Global Round : 20/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.051 | Train_Acc: 98.280
| Global Round : 20/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.038 | Train_Acc: 98.670
| Global Round : 20/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.029 | Train_Acc: 99.160
| Global Round : 20/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.017 | Train_Acc: 99.530
| Global Round : 20/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.021 | Train_Acc: 99.345
| Client id:2 | Test_Loss: 0.306 | Test_Acc: 92.229
```

```
!python agnostic_federated_learning/main.py --federated_type afl --dataset fmnist --data_dist iid
| Client id:2 | Test_Loss: 0.306 | Test_Acc: 92.229
| Global Round : 20/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.054 | Train_Acc: 98.135
| Global Round : 20/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.037 | Train_Acc: 98.770
| Global Round : 20/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.026 | Train_Acc: 99.120
| Global Round : 20/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.018 | Train_Acc: 99.445
| Global Round : 20/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.014 | Train_Acc: 99.620
aggregating weights...
lambda: tensor([0.3294, 0.3400, 0.3306])
| Client id:0 | Test_Loss: 0.295 | Test_Acc: 92.469
| Global Round : 21/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.068 | Train_Acc: 97.550
| Global Round : 21/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.036 | Train_Acc: 98.895
| Global Round : 21/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.021 | Train_Acc: 99.365
| Global Round : 21/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.011 | Train_Acc: 99.680
| Global Round : 21/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.010 | Train_Acc: 99.765
| Client id:1 | Test_Loss: 0.365 | Test_Acc: 91.029
| Global Round : 21/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.047 | Train_Acc: 98.415
| Global Round : 21/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.033 | Train_Acc: 98.990
| Global Round : 21/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.033 | Train_Acc: 98.940
| Global Round : 21/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.022 | Train_Acc: 99.380
| Global Round : 21/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.610
| Client id:2 | Test_Loss: 0.309 | Test_Acc: 91.959
| Global Round : 21/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.054 | Train_Acc: 98.110
| Global Round : 21/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.034 | Train_Acc: 98.875
| Global Round : 21/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.027 | Train_Acc: 99.165
| Global Round : 21/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.019 | Train_Acc: 99.480
| Global Round : 21/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.010 | Train_Acc: 99.745
aggregating weights...
lambda: tensor([0.3291, 0.3404, 0.3305])
| Client id:0 | Test_Loss: 0.297 | Test_Acc: 92.919
| Global Round : 22/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.055 | Train_Acc: 98.190
| Global Round : 22/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.052 | Train_Acc: 98.270
| Global Round : 22/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.026 | Train_Acc: 99.260
| Global Round : 22/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.021 | Train_Acc: 99.415
| Global Round : 22/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.012 | Train_Acc: 99.720
| Client id:1 | Test_Loss: 0.381 | Test_Acc: 90.999
| Global Round : 22/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.057 | Train_Acc: 97.935
| Global Round : 22/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.043 | Train_Acc: 98.620
| Global Round : 22/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.029 | Train_Acc: 99.095
| Global Round : 22/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.017 | Train_Acc: 99.580
| Global Round : 22/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.012 | Train_Acc: 99.675
| Client id:2 | Test_Loss: 0.308 | Test_Acc: 91.479
| Global Round : 22/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.051 | Train_Acc: 98.270
```

```
| Client id:2 | Test_Loss: 0.308 | Test_Acc: 91.479
| Global Round : 22/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.051 | Train_Acc: 98.270
| Global Round : 22/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.041 | Train_Acc: 98.515
| Global Round : 22/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.025 | Train_Acc: 99.225
| Global Round : 22/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.018 | Train_Acc: 99.410
| Global Round : 22/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.650
aggregating weights...
lambda: tensor([0.3288, 0.3409, 0.3303])
| Client id:0 | Test_Loss: 0.306 | Test_Acc: 92.739
| Global Round : 23/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.053 | Train_Acc: 98.180
| Global Round : 23/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.046 | Train_Acc: 98.340
| Global Round : 23/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.029 | Train_Acc: 99.045
| Global Round : 23/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.023 | Train_Acc: 99.315
| Global Round : 23/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.690
| Client id:1 | Test_Loss: 0.381 | Test_Acc: 91.239
| Global Round : 23/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.052 | Train_Acc: 98.135
| Global Round : 23/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.041 | Train_Acc: 98.615
| Global Round : 23/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.025 | Train_Acc: 99.180
| Global Round : 23/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.016 | Train_Acc: 99.580
| Global Round : 23/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.007 | Train_Acc: 99.880
| Client id:2 | Test_Loss: 0.308 | Test_Acc: 91.899
| Global Round : 23/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.050 | Train_Acc: 98.240
| Global Round : 23/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.032 | Train_Acc: 98.935
| Global Round : 23/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.022 | Train_Acc: 99.325
| Global Round : 23/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.017 | Train_Acc: 99.560
| Global Round : 23/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.008 | Train_Acc: 99.850
aggregating weights...
lambda: tensor([0.3285, 0.3414, 0.3301])
| Client id:0 | Test_Loss: 0.294 | Test_Acc: 92.739
| Global Round : 24/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.057 | Train_Acc: 98.050
| Global Round : 24/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.035 | Train_Acc: 98.860
| Global Round : 24/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.031 | Train_Acc: 98.945
| Global Round : 24/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.019 | Train_Acc: 99.445
| Global Round : 24/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.012 | Train_Acc: 99.675
| Client id:1 | Test_Loss: 0.380 | Test_Acc: 90.759
| Global Round : 24/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.053 | Train_Acc: 98.170
| Global Round : 24/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.034 | Train_Acc: 98.945
| Global Round : 24/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.028 | Train_Acc: 99.115
| Global Round : 24/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.018 | Train_Acc: 99.500
| Global Round : 24/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.008 | Train_Acc: 99.875
| Client id:2 | Test_Loss: 0.303 | Test_Acc: 91.959
| Global Round : 24/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.053 | Train_Acc: 98.170
| Global Round : 24/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.035 | Train_Acc: 98.830
| Global Round : 24/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.017 | Train_Acc: 99.515
| Global Round : 24/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.014 | Train_Acc: 99.645
| Global Round : 24/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.015 | Train_Acc: 99.595
aggregating weights...
```

```
aggregating weights...
lambda: tensor([0.3282, 0.3420, 0.3298])
 | Client id:0 | Test_Loss: 0.298 | Test_Acc: 92.679
 | Global Round : 25/30 | Client id:0 | Local Epoch : 1/5 |  Train_Loss: 0.055 | Train_Acc: 98.095
 | Global Round : 25/30 | Client id:0 | Local Epoch : 2/5 |  Train_Loss: 0.039 | Train_Acc: 98.705
 | Global Round : 25/30 | Client id:0 | Local Epoch : 3/5 |  Train_Loss: 0.031 | Train_Acc: 98.955
 | Global Round : 25/30 | Client id:0 | Local Epoch : 4/5 |  Train_Loss: 0.016 | Train_Acc: 99.510
 | Global Round : 25/30 | Client id:0 | Local Epoch : 5/5 |  Train_Loss: 0.015 | Train_Acc: 99.600
 | Client id:1 | Test_Loss: 0.387 | Test_Acc: 90.699
 | Global Round : 25/30 | Client id:1 | Local Epoch : 1/5 |  Train_Loss: 0.042 | Train_Acc: 98.640
 | Global Round : 25/30 | Client id:1 | Local Epoch : 2/5 |  Train_Loss: 0.038 | Train_Acc: 98.730
 | Global Round : 25/30 | Client id:1 | Local Epoch : 3/5 |  Train_Loss: 0.027 | Train_Acc: 99.075
 | Global Round : 25/30 | Client id:1 | Local Epoch : 4/5 |  Train_Loss: 0.018 | Train_Acc: 99.440
 | Global Round : 25/30 | Client id:1 | Local Epoch : 5/5 |  Train_Loss: 0.012 | Train_Acc: 99.665
 | Client id:2 | Test_Loss: 0.304 | Test_Acc: 92.109
 | Global Round : 25/30 | Client id:2 | Local Epoch : 1/5 |  Train_Loss: 0.051 | Train_Acc: 98.225
 | Global Round : 25/30 | Client id:2 | Local Epoch : 2/5 |  Train_Loss: 0.039 | Train_Acc: 98.710
 | Global Round : 25/30 | Client id:2 | Local Epoch : 3/5 |  Train_Loss: 0.023 | Train_Acc: 99.325
 | Global Round : 25/30 | Client id:2 | Local Epoch : 4/5 |  Train_Loss: 0.018 | Train_Acc: 99.480
 | Global Round : 25/30 | Client id:2 | Local Epoch : 5/5 |  Train_Loss: 0.010 | Train_Acc: 99.790
aggregating weights...
lambda: tensor([0.3279, 0.3426, 0.3296])
 | Client id:0 | Test_Loss: 0.300 | Test_Acc: 92.739
 | Global Round : 26/30 | Client id:0 | Local Epoch : 1/5 |  Train_Loss: 0.054 | Train_Acc: 98.160
 | Global Round : 26/30 | Client id:0 | Local Epoch : 2/5 |  Train_Loss: 0.036 | Train_Acc: 98.795
 | Global Round : 26/30 | Client id:0 | Local Epoch : 3/5 |  Train_Loss: 0.018 | Train_Acc: 99.480
 | Global Round : 26/30 | Client id:0 | Local Epoch : 4/5 |  Train_Loss: 0.016 | Train_Acc: 99.535
 | Global Round : 26/30 | Client id:0 | Local Epoch : 5/5 |  Train_Loss: 0.009 | Train_Acc: 99.770
 | Client id:1 | Test_Loss: 0.390 | Test_Acc: 91.389
 | Global Round : 26/30 | Client id:1 | Local Epoch : 1/5 |  Train_Loss: 0.052 | Train_Acc: 98.230
 | Global Round : 26/30 | Client id:1 | Local Epoch : 2/5 |  Train_Loss: 0.039 | Train_Acc: 98.715
 | Global Round : 26/30 | Client id:1 | Local Epoch : 3/5 |  Train_Loss: 0.031 | Train_Acc: 99.010
 | Global Round : 26/30 | Client id:1 | Local Epoch : 4/5 |  Train_Loss: 0.021 | Train_Acc: 99.365
 | Global Round : 26/30 | Client id:1 | Local Epoch : 5/5 |  Train_Loss: 0.018 | Train_Acc: 99.445
 | Client id:2 | Test_Loss: 0.319 | Test_Acc: 91.509
 | Global Round : 26/30 | Client id:2 | Local Epoch : 1/5 |  Train_Loss: 0.053 | Train_Acc: 98.215
 | Global Round : 26/30 | Client id:2 | Local Epoch : 2/5 |  Train_Loss: 0.037 | Train_Acc: 98.815
 | Global Round : 26/30 | Client id:2 | Local Epoch : 3/5 |  Train_Loss: 0.027 | Train_Acc: 99.130
 | Global Round : 26/30 | Client id:2 | Local Epoch : 4/5 |  Train_Loss: 0.021 | Train_Acc: 99.435
 | Global Round : 26/30 | Client id:2 | Local Epoch : 5/5 |  Train_Loss: 0.011 | Train_Acc: 99.770
```

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| Global Round : 26/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.011 | Train_Acc: 99.770
aggregating weights...
lambda: tensor([0.3275, 0.3431, 0.3294])
| Client id:0 | Test_Loss: 0.288 | Test_Acc: 92.769
| Global Round : 27/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.060 | Train_Acc: 97.865
| Global Round : 27/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.040 | Train_Acc: 98.730
| Global Round : 27/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.033 | Train_Acc: 98.970
| Global Round : 27/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.014 | Train_Acc: 99.570
| Global Round : 27/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.008 | Train_Acc: 99.850
| Client id:1 | Test_Loss: 0.369 | Test_Acc: 91.119
| Global Round : 27/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.047 | Train_Acc: 98.315
| Global Round : 27/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.030 | Train_Acc: 99.035
| Global Round : 27/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.029 | Train_Acc: 99.160
| Global Round : 27/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.020 | Train_Acc: 99.430
| Global Round : 27/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.660
| Client id:2 | Test_Loss: 0.304 | Test_Acc: 91.839
| Global Round : 27/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.051 | Train_Acc: 98.230
| Global Round : 27/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.036 | Train_Acc: 98.785
| Global Round : 27/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.015 | Train_Acc: 99.630
| Global Round : 27/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.012 | Train_Acc: 99.700
| Global Round : 27/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.012 | Train_Acc: 99.705
aggregating weights...
lambda: tensor([0.3272, 0.3436, 0.3292])
| Client id:0 | Test_Loss: 0.307 | Test_Acc: 92.649
| Global Round : 28/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.046 | Train_Acc: 98.460
| Global Round : 28/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.036 | Train_Acc: 98.840
| Global Round : 28/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.028 | Train_Acc: 99.210
| Global Round : 28/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.017 | Train_Acc: 99.575
| Global Round : 28/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.010 | Train_Acc: 99.750
| Client id:1 | Test_Loss: 0.385 | Test_Acc: 91.089
| Global Round : 28/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.046 | Train_Acc: 98.505
| Global Round : 28/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.036 | Train_Acc: 98.895
| Global Round : 28/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.028 | Train_Acc: 99.175
| Global Round : 28/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.014 | Train_Acc: 99.625
| Global Round : 28/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.011 | Train_Acc: 99.750
| Client id:2 | Test_Loss: 0.312 | Test_Acc: 91.719
| Global Round : 28/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.055 | Train_Acc: 98.005
| Global Round : 28/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.034 | Train_Acc: 98.940
| Global Round : 28/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.027 | Train_Acc: 99.165
| Global Round : 28/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.013 | Train_Acc: 99.680
| Global Round : 28/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.010 | Train_Acc: 99.755
aggregating weights
```

```
aggregating weights...
lambda: tensor([0.3269, 0.3441, 0.3290])
| Client id:0 | Test_Loss: 0.303 | Test_Acc: 92.499
| Global Round : 29/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.047 | Train_Acc: 98.440
| Global Round : 29/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.036 | Train_Acc: 98.835
| Global Round : 29/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.019 | Train_Acc: 99.440
| Global Round : 29/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.015 | Train_Acc: 99.610
| Global Round : 29/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.009 | Train_Acc: 99.835
| Client id:1 | Test_Loss: 0.381 | Test_Acc: 90.909
| Global Round : 29/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.041 | Train_Acc: 98.710
| Global Round : 29/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.040 | Train_Acc: 98.605
| Global Round : 29/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.027 | Train_Acc: 99.220
| Global Round : 29/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.020 | Train_Acc: 99.515
| Global Round : 29/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.013 | Train_Acc: 99.670
| Client id:2 | Test_Loss: 0.319 | Test_Acc: 91.839
| Global Round : 29/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.044 | Train_Acc: 98.400
| Global Round : 29/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.034 | Train_Acc: 98.870
| Global Round : 29/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.023 | Train_Acc: 99.305
| Global Round : 29/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.017 | Train_Acc: 99.540
| Global Round : 29/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.019 | Train_Acc: 99.410
aggregating weights...
lambda: tensor([0.3266, 0.3445, 0.3289])
| Client id:0 | Test_Loss: 0.294 | Test_Acc: 92.379
| Global Round : 30/30 | Client id:0 | Local Epoch : 1/5 |   Train_Loss: 0.058 | Train_Acc: 98.095
| Global Round : 30/30 | Client id:0 | Local Epoch : 2/5 |   Train_Loss: 0.035 | Train_Acc: 98.770
| Global Round : 30/30 | Client id:0 | Local Epoch : 3/5 |   Train_Loss: 0.032 | Train_Acc: 98.980
| Global Round : 30/30 | Client id:0 | Local Epoch : 4/5 |   Train_Loss: 0.022 | Train_Acc: 99.340
| Global Round : 30/30 | Client id:0 | Local Epoch : 5/5 |   Train_Loss: 0.010 | Train_Acc: 99.785
| Client id:1 | Test_Loss: 0.371 | Test_Acc: 91.089
| Global Round : 30/30 | Client id:1 | Local Epoch : 1/5 |   Train_Loss: 0.044 | Train_Acc: 98.490
| Global Round : 30/30 | Client id:1 | Local Epoch : 2/5 |   Train_Loss: 0.044 | Train_Acc: 98.535
| Global Round : 30/30 | Client id:1 | Local Epoch : 3/5 |   Train_Loss: 0.023 | Train_Acc: 99.310
| Global Round : 30/30 | Client id:1 | Local Epoch : 4/5 |   Train_Loss: 0.017 | Train_Acc: 99.485
| Global Round : 30/30 | Client id:1 | Local Epoch : 5/5 |   Train_Loss: 0.014 | Train_Acc: 99.645
| Client id:2 | Test_Loss: 0.300 | Test_Acc: 91.869
| Global Round : 30/30 | Client id:2 | Local Epoch : 1/5 |   Train_Loss: 0.044 | Train_Acc: 98.570
| Global Round : 30/30 | Client id:2 | Local Epoch : 2/5 |   Train_Loss: 0.038 | Train_Acc: 98.685
| Global Round : 30/30 | Client id:2 | Local Epoch : 3/5 |   Train_Loss: 0.020 | Train_Acc: 99.425
| Global Round : 30/30 | Client id:2 | Local Epoch : 4/5 |   Train_Loss: 0.018 | Train_Acc: 99.545
| Global Round : 30/30 | Client id:2 | Local Epoch : 5/5 |   Train_Loss: 0.005 | Train_Acc: 99.960
aggregating weights...
lambda: tensor([0.3263, 0.3450, 0.3286])

Final Results
| Client id:0 | Test_Loss: 0.312 | Test_Acc: 92.379
| Client id:1 | Test_Loss: 0.383 | Test_Acc: 91.149
| Client id:2 | Test_Loss: 0.315 | Test_Acc: 91.959
```