WARNING flwr 2024-03-23 20:16:09,208 | app.py:211 | Both server and strategy were provided, ignoring strategy
INFO flwr 2024-03-23 20:16:09,209 | app.py:178 | Starting Flower simulation, config: ServerConfig(num_rounds=5, round_timeout=None)
Data partitioned across 4 clients and 0.0 of local dataset reserved for validation.
FL experiment configured for 5 rounds with 4 client in the pool.
FL round will proceed with 100.0% of clients sampled, at least 1.
2024-03-23 20:16:11,939 INFO worker.py:1621 -- Started a local Ray instance.
INFO flwr 2024-03-23 20:16:13,726 | app.py:213 | Flower VCE: Ray initialized with resources: {'memory': 5406668800.0, 'CPU': 8.0, 'node:127.0.0.1': 1.0, 'object_store_memory': 2147483648.0, 'node:__internal_head__': 1.0}
INFO flwr 2024-03-23 20:16:13,726 | app.py:219 | Optimize your simulation with Flower VCE: https://flower.dev/docs/framework/how-to-run-simulations.html
INFO flwr 2024-03-23 20:16:13,727 | app.py:242 | Flower VCE: Resources for each Virtual Client: {'num_cpus': 2}
INFO flwr 2024-03-23 20:16:13,748 | app.py:288 | Flower VCE: Creating VirtualClientEngineActorPool with 4 actors
INFO flwr 2024-03-23 20:16:13,749 | 2437557820.py:20 | Initializing global parameters
INFO flwr 2024-03-23 20:16:13,750 | 2437557820.py:226 | Requesting initial parameters from one random client
[2m[36m(pid=23899)[0m 2024-03-23 20:16:16.759028: I tensorflow/core/platform/cpu_feature_guard.cc:182] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.
[2m[36m(pid=23899)[0m To enable the following instructions: AVX2 AVX512F AVX512_VNNI FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.
[2m[36m(DefaultActor pid=23900)[0m /Users/rohan/anaconda3/lib/python3.11/site-packages/torch/utils/data/_utils/collate.py:171: UserWarning: The given NumPy array is not writable, and PyTorch does not support non-writable tensors. This means writing to this tensor will result in undefined behavior. You may want to copy the array to protect its data or make it writable before converting it to a tensor. This type of warning will be suppressed for the rest of this program. (Triggered internally at /Users/runner/work/pytorch/pytorch/pytorch/torch/csrc/utils/tensor_numpy.cpp:212.)
[2m[36m(DefaultActor pid=23900)[0m return collate([torch.as_tensor(b) for b in batch], collate_fn_map=collate_fn_map)
[2m[36m(pid=23900)[0m 2024-03-23 20:16:16.759028: I tensorflow/core/platform/cpu_feature_guard.cc:182] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.[32m [repeated 3x across cluster]
(Ray deduplicates logs by default. Set RAY_DEDUP_LOGS=0 to disable log deduplication, or see https://docs.ray.io/en/master/ray-observability/ray-logging.html#log-deduplication for more options.)[0m
[2m[36m(pid=23900)[0m To enable the following instructions: AVX2 AVX512F AVX512_VNNI FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.[32m [repeated 3x across cluster][0m
INFO flwr 2024-03-23 20:16:35,353 | 2437557820.py:231 | Received initial parameters from one random client
INFO flwr 2024-03-23 20:16:35,354 | 2437557820.py:23 | Evaluating initial parameters
INFO flwr 2024-03-23 20:17:17,074 | 2437557820.py:26 | initial parameters (loss,

other metrics): 0.014454318110684757, {'accuracy': tensor(0.0013)}
INFO flwr 2024-03-23 20:17:17,078 | 2437557820.py:36 | FL starting
DEBUG flwr 2024-03-23 20:17:17,079 | 2437557820.py:165 | fit_round 1: strategy sampled 4 clients (out of 4)
Evaluation on the server: test_loss=0.0145, test_accuracy=0.0013
Configuring round 1
[2m[36m(DefaultActor pid=23899)[0m /Users/rohan/anaconda3/lib/python3.11/site-packages/torch/utils/data/_utils/collate.py:171: UserWarning: The given NumPy array is not writable, and PyTorch does not support non-writable tensors. This means writing to this tensor will result in undefined behavior. You may want to copy the array to protect its data or make it writable before converting it to a tensor. This type of warning will be suppressed for the rest of this program. (Triggered internally at /Users/runner/work/pytorch/pytorch/pytorch/torch/csrc/utils/tensor_numpy.cpp:212.)
[2m[36m(DefaultActor pid=23899)[0m  return collate([torch.as_tensor(b) for b in batch], collate_fn_map=collate_fn_map)
[2m[36m(DefaultActor pid=23898)[0m /Users/rohan/anaconda3/lib/python3.11/site-packages/torch/utils/data/_utils/collate.py:171: UserWarning: The given NumPy array is not writable, and PyTorch does not support non-writable tensors. This means writing to this tensor will result in undefined behavior. You may want to copy the array to protect its data or make it writable before converting it to a tensor. This type of warning will be suppressed for the rest of this program. (Triggered internally at /Users/runner/work/pytorch/pytorch/pytorch/torch/csrc/utils/tensor_numpy.cpp:212.)
[2m[36m(DefaultActor pid=23898)[0m  return collate([torch.as_tensor(b) for b in batch], collate_fn_map=collate_fn_map)
[2m[36m(DefaultActor pid=23900)[0m Client 2: only had its own tree
[2m[36m(DefaultActor pid=23899)[0m Client 3: only had its own tree
[2m[36m(DefaultActor pid=23898)[0m Client 1: only had its own tree
[2m[36m(DefaultActor pid=23900)[0m Client 2: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23897)[0m Client 0: only had its own tree
[2m[36m(DefaultActor pid=23900)[0m Client 2: training round complete, 6400 examples processed
[2m[36m(DefaultActor pid=23899)[0m Client 3: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23899)[0m Client 3: training round complete, 6400 examples processed
[2m[36m(DefaultActor pid=23898)[0m Client 1: training for 100 iterations/updates
DEBUG flwr 2024-03-23 20:18:12,774 | 2437557820.py:180 | fit_round 1 received 4 results and 0 failures
WARNING flwr 2024-03-23 20:18:12,780 | fedxgb_nn_avg.py:95 | No fit_metrics_aggregation_fn provided
Server side aggregated 4 trees.
INFO flwr 2024-03-23 20:18:59,756 | 2437557820.py:51 | fit progress: (1, 0.0027849418531839206, {'accuracy': tensor(0.9987)}, 102.67845358900013)
INFO flwr 2024-03-23 20:18:59,759 | 2437557820.py:98 | evaluate_round 1: no clients selected, cancel
DEBUG flwr 2024-03-23 20:18:59,759 | 2437557820.py:165 | fit_round 2: strategy sampled 4 clients (out of 4)
Evaluation on the server: test_loss=0.0028, test_accuracy=0.9987
Configuring round 2
[2m[36m(DefaultActor pid=23897)[0m Client 2: recieved 4 trees
[2m[36m(DefaultActor pid=23897)[0m Client 0: training round complete, 6400

examples processed[32m [repeated 2x across cluster][0m
[2m[36m(DefaultActor pid=23897)[0m Client 0: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23897)[0m Client 2: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23900)[0m Client 3: recieved 4 trees[32m [repeated 3x across cluster][0m
[2m[36m(DefaultActor pid=23897)[0m Client 2: training round complete, 6400 examples processed
DEBUG flwr 2024-03-23 20:20:03,626 | 2437557820.py:180 | fit_round 2 received 4 results and 0 failures
Server side aggregated 4 trees.
INFO flwr 2024-03-23 20:20:49,621 | 2437557820.py:51 | fit progress: (2, 0.0005177892712455972, {'accuracy': tensor(0.9987)}, 212.57404871499966)
INFO flwr 2024-03-23 20:20:49,622 | 2437557820.py:98 | evaluate_round 2: no clients selected, cancel
DEBUG flwr 2024-03-23 20:20:49,623 | 2437557820.py:165 | fit_round 3: strategy sampled 4 clients (out of 4)
Evaluation on the server: test_loss=0.0005, test_accuracy=0.9987
Configuring round 3
[2m[36m(DefaultActor pid=23900)[0m Client 3: training for 100 iterations/updates[32m [repeated 3x across cluster][0m
[2m[36m(DefaultActor pid=23898)[0m Client 3: recieved 4 trees
[2m[36m(DefaultActor pid=23900)[0m Client 3: training round complete, 6400 examples processed[32m [repeated 3x across cluster][0m
[2m[36m(DefaultActor pid=23899)[0m Client 2: recieved 4 trees
[2m[36m(DefaultActor pid=23898)[0m Client 3: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23897)[0m Client 1: recieved 4 trees[32m [repeated 2x across cluster][0m
[2m[36m(DefaultActor pid=23898)[0m Client 3: training round complete, 6400 examples processed
[2m[36m(DefaultActor pid=23900)[0m Client 0: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23900)[0m Client 0: training round complete, 6400 examples processed
[2m[36m(DefaultActor pid=23897)[0m Client 1: training for 100 iterations/updates[32m [repeated 2x across cluster][0m
DEBUG flwr 2024-03-23 20:21:57,522 | 2437557820.py:180 | fit_round 3 received 4 results and 0 failures
Server side aggregated 4 trees.
INFO flwr 2024-03-23 20:22:48,186 | 2437557820.py:51 | fit progress: (3, 0.00017098544069340396, {'accuracy': tensor(0.9987)}, 331.14230841100016)
INFO flwr 2024-03-23 20:22:48,188 | 2437557820.py:98 | evaluate_round 3: no clients selected, cancel
DEBUG flwr 2024-03-23 20:22:48,189 | 2437557820.py:165 | fit_round 4: strategy sampled 4 clients (out of 4)
Evaluation on the server: test_loss=0.0002, test_accuracy=0.9987
Configuring round 4
[2m[36m(DefaultActor pid=23897)[0m Client 2: recieved 4 trees
[2m[36m(DefaultActor pid=23897)[0m Client 1: training round complete, 6400 examples processed[32m [repeated 2x across cluster][0m
[2m[36m(DefaultActor pid=23898)[0m Client 3: recieved 4 trees[32m [repeated 3x across cluster][0m

[2m[36m(DefaultActor pid=23897)[0m Client 2: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23897)[0m Client 2: training round complete, 6400 examples processed
DEBUG flwr 2024-03-23 20:23:53,192 | 2437557820.py:180 | fit_round 4 received 4 results and 0 failures
Server side aggregated 4 trees.
INFO flwr 2024-03-23 20:24:45,646 | 2437557820.py:51 | fit progress: (4, 0.00013946323484727906, {'accuracy': tensor(0.9987)}, 448.6045036309997)
INFO flwr 2024-03-23 20:24:45,648 | 2437557820.py:98 | evaluate_round 4: no clients selected, cancel
DEBUG flwr 2024-03-23 20:24:45,649 | 2437557820.py:165 | fit_round 5: strategy sampled 4 clients (out of 4)
Evaluation on the server: test_loss=0.0001, test_accuracy=0.9987
Configuring round 5
[2m[36m(DefaultActor pid=23900)[0m Client 3: recieved 4 trees
[2m[36m(DefaultActor pid=23900)[0m Client 1: training for 100 iterations/updates[32m [repeated 3x across cluster][0m
[2m[36m(DefaultActor pid=23900)[0m Client 1: training round complete, 6400 examples processed[32m [repeated 3x across cluster][0m
[2m[36m(DefaultActor pid=23899)[0m Client 2: recieved 4 trees[32m [repeated 2x across cluster][0m
[2m[36m(DefaultActor pid=23900)[0m Client 3: training for 100 iterations/updates
[2m[36m(DefaultActor pid=23897)[0m Client 0: recieved 4 trees
[2m[36m(DefaultActor pid=23900)[0m Client 3: training round complete, 6400 examples processed
[2m[36m(DefaultActor pid=23899)[0m Client 2: training for 100 iterations/updates[32m [repeated 2x across cluster][0m
[2m[36m(DefaultActor pid=23898)[0m Client 1: training round complete, 6400 examples processed
[2m[36m(DefaultActor pid=23899)[0m Client 2: training round complete, 6400 examples processed
DEBUG flwr 2024-03-23 20:25:50,507 | 2437557820.py:180 | fit_round 5 received 4 results and 0 failures
Server side aggregated 4 trees.
INFO flwr 2024-03-23 20:26:41,364 | 2437557820.py:51 | fit progress: (5, 0.0001385338018798247, {'accuracy': tensor(0.9987)}, 564.3241737770004)
INFO flwr 2024-03-23 20:26:41,365 | 2437557820.py:98 | evaluate_round 5: no clients selected, cancel
INFO flwr 2024-03-23 20:26:41,366 | 2437557820.py:79 | FL finished in 564.3259195760002
INFO flwr 2024-03-23 20:26:41,367 | app.py:226 | app_fit: losses_distributed []
INFO flwr 2024-03-23 20:26:41,368 | app.py:227 | app_fit: metrics_distributed_fit {}
INFO flwr 2024-03-23 20:26:41,369 | app.py:228 | app_fit: metrics_distributed {}
INFO flwr 2024-03-23 20:26:41,370 | app.py:229 | app_fit: losses_centralized [(0, 0.014454318110684757), (1, 0.0027849418531839206), (2, 0.0005177892712455972), (3, 0.00017098544069340396), (4, 0.00013946323484727906), (5, 0.0001385338018798247)]
INFO flwr 2024-03-23 20:26:41,374 | app.py:230 | app_fit: metrics_centralized {'accuracy': [(0, tensor(0.0013)), (1, tensor(0.9987)), (2, tensor(0.9987)), (3, tensor(0.9987)), (4, tensor(0.9987)), (5, tensor(0.9987))]}

Evaluation on the server: test_loss=0.0001, test_accuracy=0.9987
History (loss, centralized):
	round 0: 0.014454318110684757
	round 1: 0.0027849418531839206
	round 2: 0.0005177892712455972
	round 3: 0.00017098544069340396
	round 4: 0.00013946323484727906
	round 5: 0.0001385338018798247
History (metrics, centralized):
{'accuracy': [(0, tensor(0.0013)), (1, tensor(0.9987)), (2, tensor(0.9987)), (3, tensor(0.9987)), (4, tensor(0.9987)), (5, tensor(0.9987))]}

Time = 10m 33.0s