Node

- getParam()
- initParam2Cnn()
- printResult()
- receivePara()
- sendPara(destinationNodeId)
- startTrain()
- updateLocalParameter(parameterList)

WorkNode_Normal

- bandwidth
- fixedDelay
- lastReceiveTime : int
- model
- neighborList
- nodeId
- paramList : ndarray, NoneType, dict
- simuTime : int
- tempParamList : dict

- collectParam(packetParamList)
- initParam2Cnn()
- printResult()
- receivePara()
- sendPara(destinationNodeId)
- startTrain()
- train_cnn()
- train_test()
- updateParam()

TrainModel

- getParam()
- test()
- train_main()
- updateParam(paramList)

WorkNode

- bandwidth
- cnnTrain
- fixedDelay
- lastReceiveTime : int
- neighborList
- nodeId
- paramList : dict
- simuTime : int
- tempParamList : dict

- collectParam(packetParamList)
- initParam2Cnn()
- printResult()
- receivePara()
- sendPara(destinationNodeId)
- startTrain()
- train_cnn()
- train_test()
- updateParam()

WorkNode_asynchronous

- bandwidth
- cnnTrain
- epoch : int
- fixedDelay
- lastReceiveTime : int
- neighborList
- nodeId
- paramList : dict
- simuTime : int
- tempParamList : dict

- collectParam(packetParamList)
- printResult()
- receivePara()
- sendPara(destinationNodeId)
- startTrain()
- train_cnn()
- updateParam()

AlexNetTrain

- best_acc : float
- dataset
- device
- fromNodeId
- loss_function : CrossEntropyLoss
- net
- optimizer : SGD
- save_path : str

- getParam()
- test()
- train_main()
- updateParam(paramList)

WorkNode_WithSameData_rand

- bandwidth
- cnnTrain
- fixedDelay
- lastReceiveTime : int
- neighborList
- nodeId
- paramList : dict
- simuTime : int
- tempParamList : dict

CnnTrain

- conv
- fromNodeId
- pool
- softmax
- test_images
- test_labels
- train_images
- train_labels

- forward(image, label)
- getParam()
- test_cnn()
- train(im, label, lr)
- train_main()
- updateParam(paramList)

AlexNet

- classifier : Sequential
- features : Sequential

- forward(x)

CnnTrain_rand

- nodeNum

- train_main()

Conv3x3

- filters : list
- last_input
- num_filters

- backprop(d_L_d_out, learn_rate)
- forward(input)
- iterate_regions(image)

MaxPool2

- last_input

- backprop(d_L_d_out)
- forward(input)
- iterate_regions(image)

Softmax

- biases : ndarray
- last_input
- last_input_shape
- last_totals : ndarray
- weights : list

- backprop(d_L_d_out, learn_rate)
- forward(input)

Channel

- packetList : list

- initialize()
- receiveTo(nodeId, simuTime)
- sendPacket(packet)

Config

- adjacencyMatrix
- dataNum : int
- dateNum : int
- name
- nodeBandwidth : float
- nodeFixedDelay : float
- nodeNum
- trainTimes : int

- startSimulation()

Event

- createTime
- dict_functionParam
- duration
- eventType : int
- function

- run()

NodeStatus

- nodeList : list
- nodeTrainBook : list

- initialize(nodeList)
- isAllFinishTraining()
- nodeTrainFinish(nodeId)
- printResult()
- startAllTrain(parameters)
- startReceive()

Out2Csv

- file
- filePath

- addPoint(strData)
- closeIO()

Packet

- createTime
- destinationNodeId
- packetLength : int
- paramList
- sourceNodeId

- calculateLength(paramList)

StatisticUtil

- name : str
- nodeAccList : list
- nodeLossList : list
- nodeNum : int
- nodeReceiveTime : list
- nodeTrainTime : list

- addAcc(nodeId, acc)
- addLoss(nodeId, loss)
- addReceiveTime(nodeId, receiveTime)
- addTrainTime(nodeId, trainTime)
- drawPic(nodeId)
- initialize(nodeNum, name)
- output2Csv()

Relationship labels: model, cnnTrain, cnnTrain, net, cnnTrain, conv, pool, softmax