Final Report

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Chapter 1

Vanilla Implementation

The implementation for this project is split into two modules: Sync algorithm and Networking. The Sync Algo takes a 1D array of parameters and uses the Networking module to send the parameters to other nodes. The sync algo also requests parameters from other nodes using the network module. This is done to allow the system to be easy to understand, as each module has a clear purpose. This also allows networking to be easily switched out later to a possibly faster implementation. It also means the the actual node code that does trianing need not know about any comple network situations, but it just needs to call some easy to use functions to perform syncs.

INSERT DIAGRAM

1.1 Sync Algorithm

Talk about the sync algo (maby add a diagram)

1.2 Networking

Talk about backend - REST

Chapter 2

Initial Investigation of Parameters

In this chapter, show and talk about how different parameters affected the training performance
All tests in this chapter were performed on MNIST with this model: MODEL. All agents had direct communication to all other agents. Unless otherwise stated, all agents were run on a single 3060 GPU communicating over localhost
The syncing was also done with the basic implementation from the previous chapter

2.1 Overhead Testing

Report on overheads caused by the swarm

2.2 Data Volume per Node

Compare how different data volumes affect performance

2.3 Epochs of Training Between Syncs

2.4 Number of Nodes in Network

2.5 Sync Weight

Chapter 3

Unevenly Distributed Features

Chapter 4

Sparse Network