Designing and Testing a Novel Idea Based on Federated Learning: Swarm Learning

Josh Pattman

February 17, 2023

Chapter 1

Problem and Goals

Chapter 2

Literature Review

Chapter 3

Project Management

Chapter 4

Analysis and Specification of the Solution to the Problem

Chapter 5

Detailed Design

Chapter 6

Implementation

6.1 Initial Experimentation and Setup

Before development of the swarm learning algorithm began, some initial experiments were performed to assist with implementation in further stages.

6.1.1 Model

6.1.2 Problem Difficulty

mnist -> mnist fashion
less data

6.1.3 Data Distribution

rest

6.1.4 Federated Learning

Implementing federated learning

6.2 Prototype

Algorithm expain: why no blockcahin flow of data + diagram learning rate chosen metrics: accuracy over time (sparse categorical crossentropy) results reflection and downfalls

6.3 Final

Algorithm explain + changes from last: on demand model -> model when trained + local cache flow of data diagram training counter learning rate vs no learning rate

switch to local backend accuracy over epochs results (will be discussed in more detail later on)

Chapter 7

Testing Strategy and results

Chapter 8

Critical Evaluation

Chapter 9

Conclusion and Future Work

Chapter 10

References

Chapter 11

Appendices