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Project Proposal for the ECE Course

Project Title: Exploring one of the federated learning algorithms

Introduction

Federated Learning is a decentralized learning approach that aims to train a global model from clients with local datasets. Its key objectives are:

1. Allowing for local computations, i.e., offloading the computation to the clients in the network.
2. Minimizing communication between the server and the clients in the network.

Federated learning is especially useful in scenarios where explicit data sharing over the network is not practically feasible. This approach enables learning across distributed systems without directly sharing local data.

Project Details

I plan to implement a federated learning algorithm (like FedAvg) (or use an existing library) to analyze the impact of parameters like **learning rate**, number of **clients**, number of **local iterations**, and number of **rounds** on accuracy (and possibly other metrics). I aim to provide experimental results along with plots to show these dependencies. I will test on at least **one or two** datasets, such as CIFAR-10. The project will involve data processing (including data splitting), model initialization, training, testing, and a concluding step that primarily includes the generated plots.