Compression for Federated Random Reshuffling

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Abstract

Federated Random Reshuffling (FedRR) is a recently developed method for federated training of supervised machine learning models via empirical risk minimization. It utilizes Random Reshuffling (RR), a variant of Stochastic Gradient Descent (SGD)along with Local Training carried out by the clients. We propose integration of compression techniques in FedRR, reducing the number of communicated bits in order to overcome communication bottleneck, furthermore we integrate server-side optimization (Server Stepsizes) to get improvement in theory and practice. To the best of our knowledge, this is the first time FedRR will be combined with Server Stepsizes and Compressed Iterates at the same time.

Keywords Machine Learning · Federated Learning · Random Reshuffling