Review Report:

Federated Learning for distribution skewed data using sample weights

This paper focuses on improving federated learning performance for skewed data distribution across clients. The main idea is to adjust the client distribution closer to the global distribution using sample weights. Thus, the machine learning model converges faster with higher accuracy. This work derives a solution for adjusting the distribution skewness using sample weights. The sample weights are determined by exchanging the density information implicitly by leveraging a neural network-based density estimation model, MADE. However, the reviewer has the following queries and comments:

1. In the abstract, "non-IID data issue" should be concisely discussed and IID must be expanded at its first occurrence.

2. As indicated in Introduction "the primary problem is the divergence of weights, which worsens…", please discuss this issue with an example and strengthen the motivation of the tackled problem.

3. How the proposed method is effective in resolving the issue of non-IID and privacy leakage in real-time while meeting the weight optimization criteria? Please include this detailed information within the proposed method.

4. Elaborate the effectiveness of the proposed method in reducing non-IID data impacts as compared to the existing methods in terms of accuracy, time and space complexity, and improvement in overall performance.

5. Provide complete details of the testbed set-up and the way datasets are used during experimentation within the manuscript to allow replication and verification of this work for the further growth of this research.

6. Please include following references within the manuscript at an appropriate place:

   I. Wang, Zhibin, Jiahang Qiu, Yong Zhou, Yuanming Shi, Liqun Fu, Wei Chen, and Khaled B. Letaief. "Federated learning via intelligent reflecting surface." *IEEE Transactions on Wireless Communications* 21, no. 2 (2021): 808-822.

   II. Singh, Ashutosh Kumar, Deepika Saxena, Jitendra Kumar, and Vrinda Gupta. "A quantum approach towards the adaptive prediction of cloud workloads." *IEEE Transactions on Parallel and Distributed Systems* 32, no. 12 (2021): 2893-2905.

   III. Lim, Wei Yang Bryan, Jer Shyuan Ng, Zehui Xiong, Jiangming Jin, Yang Zhang, Dusit Niyato, Cyril Leung, and Chunyan Miao. "Decentralized edge intelligence: A dynamic resource allocation framework for hierarchical federated learning." *IEEE Transactions on Parallel and Distributed Systems* 33, no. 3 (2021): 536-550.

7. Please carefully proof-read the complete manuscript for typos and English grammar before the revised manuscript submission.