World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:17, No:07, 2023

MULTI-FLGANs: Multi-Distributed Adversarial Networks for Non-Independent and Identically Distributed Distribution

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Abstract : Federated learning is an emerging concept in the domain of distributed machine learning. This concept has enabled General Adversarial Networks (GANs) to benefit from the rich distributed training data while preserving privacy. However, in a non-IID setting, current federated GAN architectures are unstable, struggling to learn the distinct features, and vulnerable to mode collapse. In this paper, we propose an architecture MULTI-FLGAN to solve the problem of low-quality images, mode collapse, and instability for non-IID datasets. Our results show that MULTI-FLGAN is four times as stable and performant (i.e., high inception score) on average over 20 clients compared to baseline FLGAN.

Keywords : federated learning, generative adversarial network, inference attack, non-IID data distribution
Conference Title : ICMLCS 2023 : International Conference on Machine Learning in Computer Security
Conference Location : Prague, Czechia
Conference Dates : July 03-04, 2023