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CLOUD-BASED GAN ARCHITECTURES FOR REAL-TIME DATA AUGMENTATION IN MACHINE LEARNING MODELS

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ABSTRACT

The increasing demand for high-quality datasets in machine learning (ML) applications has led to the exploration of data augmentation techniques. Generative Adversarial Networks (GANs) have emerged as powerful tools for generating synthetic data to enhance model performance. This paper investigates the use of cloud-based GAN architectures for real-time data augmentation in ML models, focusing on scalability, efficiency, and real-time processing. We explore the integration of GANs with cloud platforms, leveraging computational power to generate diverse data on-the-fly, enabling real-time model training and improvement. Through experiments, we demonstrate the efficacy of these cloud-based systems in handling large datasets and accelerating ML workflows, emphasizing the impact of GAN-driven augmentation on model accuracy and generalization.

KEYWORDS: *Cloud Computing, Generative Adversarial Networks, Real-Time Augmentation, Machine Learning, Data Augmentation, Scalability, Synthetic Data, Cloud Architecture.*

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