

## Semi-Supervised Outlier Detection Using a Generative and Adversary Framework

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**Abstract :** In many outlier detection tasks, only training data belonging to one class, i.e., the positive class, is available. The task is then to predict a new data point as belonging either to the positive class or to the negative class, in which case the data point is considered an outlier. For this task, we propose a novel corrupted Generative Adversarial Network (CorGAN). In the adversarial process of training CorGAN, the Generator generates outlier samples for the negative class, and the Discriminator is trained to distinguish the positive training data from the generated negative data. The proposed framework is evaluated using an image dataset and a real-world network intrusion dataset. Our outlier-detection method achieves state-of-the-art performance on both tasks.

**Keywords :** one-class classification, outlier detection, generative adversary networks, semi-supervised learning

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