Reviewing Image Recognition and Anomaly Detection Methods Utilizing GANs

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Abstract : This review paper examines the emerging applications of generative adversarial networks (GANs) in the fields of image recognition and anomaly detection. With the rapid growth of digital image data, the need for efficient and accurate methodologies to identify and classify images has become increasingly critical. GANs, known for their ability to generate realistic data, have gained significant attention for their potential to enhance traditional image recognition systems and improve anomaly detection performance. The paper systematically analyzes various GAN architectures and their modifications tailored for image recognition tasks, highlighting their strengths and limitations. Additionally, it delves into the effectiveness of GANs in detecting anomalies in diverse datasets, including medical imaging, industrial inspection, and surveillance. The review also discusses the challenges faced in training GANs, such as mode collapse and stability issues, and presents recent advancements aimed at overcoming these obstacles.