

GAN-Based Steganography: Enhancing Data Concealment

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Abstract: Ensuring the secure transfer of information across networks is paramount to uphold confidentiality and privacy, both of which are critical in today's society. To safeguard information from unauthorized access, interception, or tampering during communication, various protective techniques are employed. Steganography is one such method, involving the concealment of information within a cover medium, such as an image, so that the presence of the hidden message remains undetected. This approach is particularly valuable when cryptographic measures alone are insufficient for protecting sensitive data. Even if the cover image is intercepted, the concealed message should only be accessible to the intended sender and recipient. Our proposed solution addresses security risks by embedding secret data within stego-images generated through Generative Adversarial Networks (GANs), and then accurately extracting it with a decoder. The advantage of using GANs lies in their ability to produce images that are visually realistic and appealing, thus minimizing the chances of the hidden message being discovered. Furthermore, this platform can be adapted to prevent digital piracy by embedding watermarks into digital content, and it can be further refined with expert input.

Keywords: Steganography, GAN (Generative Adversarial Networks), Image, Encode