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Steganography: An Enhanced Method for Securely Concealing Information within Digital Image Files

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Abstract: *Image Steganography, the science of hiding information in digital images, is an essential part of secure communication. This system utilizes Adaptive Data Embedding, where it selectivity determines the best places in an image to conceal information, maintaining visual quality and avoiding detection by steganalysis tools. Moreover, Multi-Layered Data Embedding distributes hidden data over multiple layers and color channels, providing an additional layer of protection. For data integrity, Error Correction Mechanisms are implemented, safeguarding the hidden information against possible distortions due to compression or image alteration. In the process of encryption, users can choose an image and the information they want to hide. For decryption, users can retrieve the embedded data by choosing the altered image, with the system independently showing the original image and storing the recovered data safely. The system offers a secure, adaptive, and reliable solution for hidden data exchange..*

Keywords: Secure Data Concealment, Adaptive Steganographic Techniques, Robust Error-Resilient Embedding, MultiChannel Information Hiding

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