

# **IMPLEMENTATION OF LEAST SIGNIFICANT BIT (LSB) STEGANOGRAPHY FOR HIDING DIGITAL IMAGE OWNERSHIP INFORMATION**

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## **ABSTRACT**

*In an increasingly digital era, the importance of safeguarding the ownership of images or copyrights has become significantly critical. This research aims to understand the utilization of steganography techniques, particularly the Least Significant Bit (LSB) method, for embedding ownership information into images without disturbing their visual quality. The Least Significant Bit method embeds secret messages by altering the least significant bits of each byte of image data, rendering the changes visually imperceptible. The use of steganographic technology is relevant for protecting sensitive information within images, including copyright, by secretly embedding ownership information that remains readable even when the image is copied or edited. This study evaluates the impact of various conditions on the security of the embedded information using the Least Significant Bit method and validates the success of this technique across different usage scenarios. The results demonstrate that the Least Significant Bit method can accurately embed and retrieve ownership information without significantly compromising the visual quality of the image, as evidenced by very high PSNR test results ranging from 50.79 dB to 51.26 dB, and an extremely low MSE of 0.0000. Furthermore, it is recommended to avoid compression processes that could degrade image quality, as often occurs on platforms that automatically compress files. This analysis provides important considerations regarding the results of encoding and transmitting images, as well as optimizing the use of the Least Significant Bit method to maintain the desired image quality.*

*Keywords: Security, Steganography, Least Significant Bit (LSB), Encoding, Decoding.*