

Forensic Steganography Report

Report Generated: Thu Nov 13 21:00:31 2025

Case Details

Original

(Cover)

File:
detect_3ffbcb488d4d411f8dfe7b5ae40d7a4a_stego_ab80078f69ab40208175e8fd9a4be34c_img2.png

Suspected

(Stego)

File:
detect_3ffbcb488d4d411f8dfe7b5ae40d7a4a_stego_ab80078f69ab40208175e8fd9a4be34c_img2.png

Analysis Date: 2025-11-13 21:00:31

File Size Analysis

Property	Cover Image	Stego Image
File Size	880.55 KB	880.55 KB
Image Dimensions	1024 x 1536	1024 x 1536
Size Difference	+0.00 KB (+0.00%)	

Size Analysis Conclusion:

Minimal file size change detected. This could indicate: LSB steganography, no embedding, or efficient compression.

Detection Verdict

STEGANOGRAPHY DETECTED (LSB)

(Confidence: 92.3%)

Critical Finding: Spatial Domain (LSB) Steganography Detected

The analysis confirms hidden data embedded using the LSB algorithm.

1. Detection Confidence: 92.3%
2. Algorithm Identified: LSB
3. Statistical Evidence: 57.71% of pixels modified
4. Modified Pixels: 907,764 pixels

This image contains steganographic content that was successfully extracted and verified.

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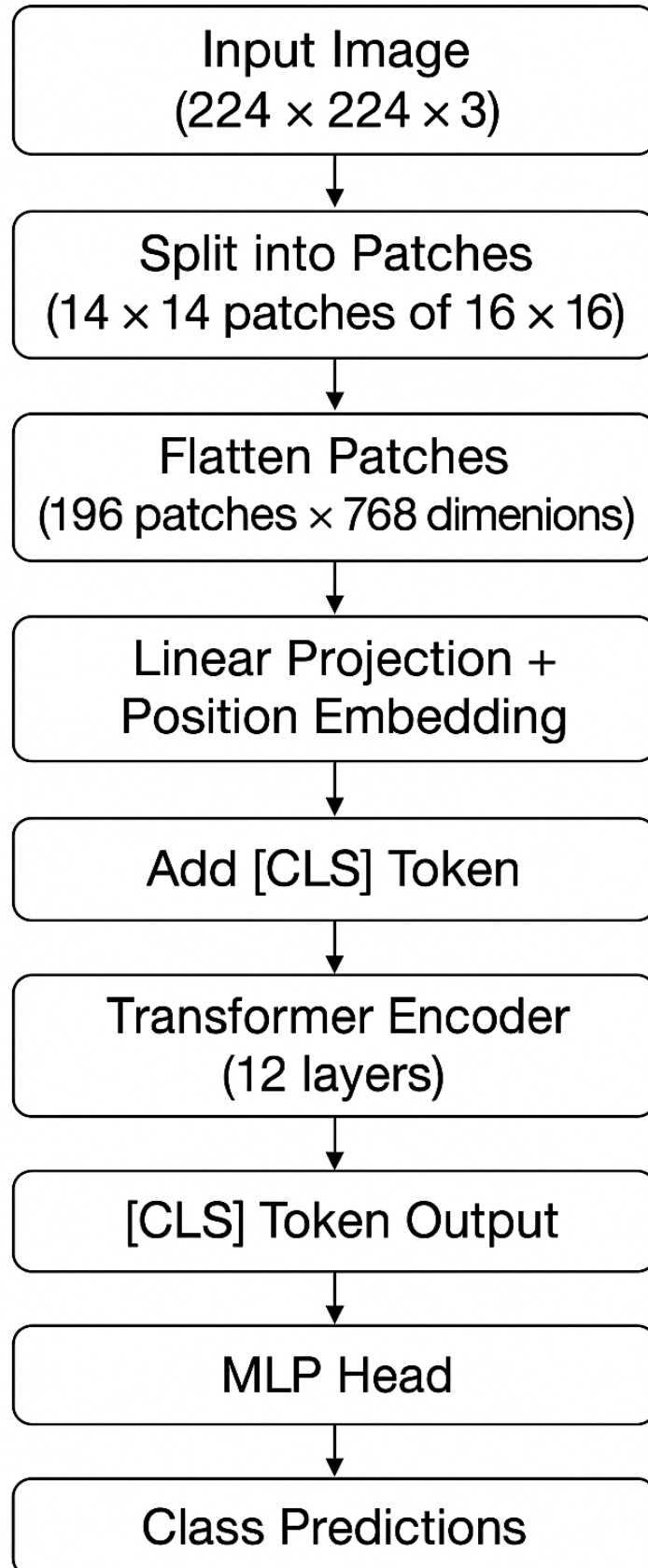
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Visual Analysis

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Original (Cover) Image



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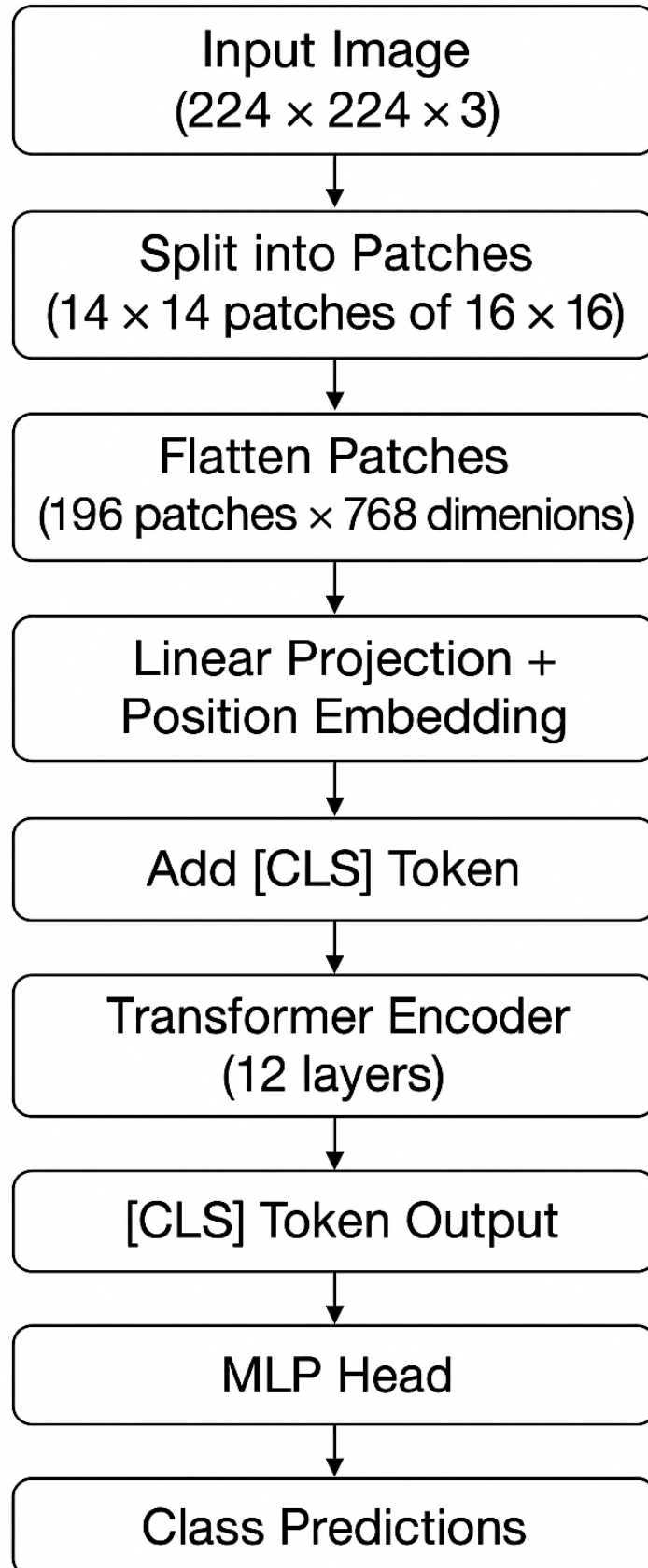
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Explanation: The baseline image for comparison.

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Suspected (Stego) Image



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Explanation: The image under investigation. Visual inspection shows no obvious differences.

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Pixel Difference Map

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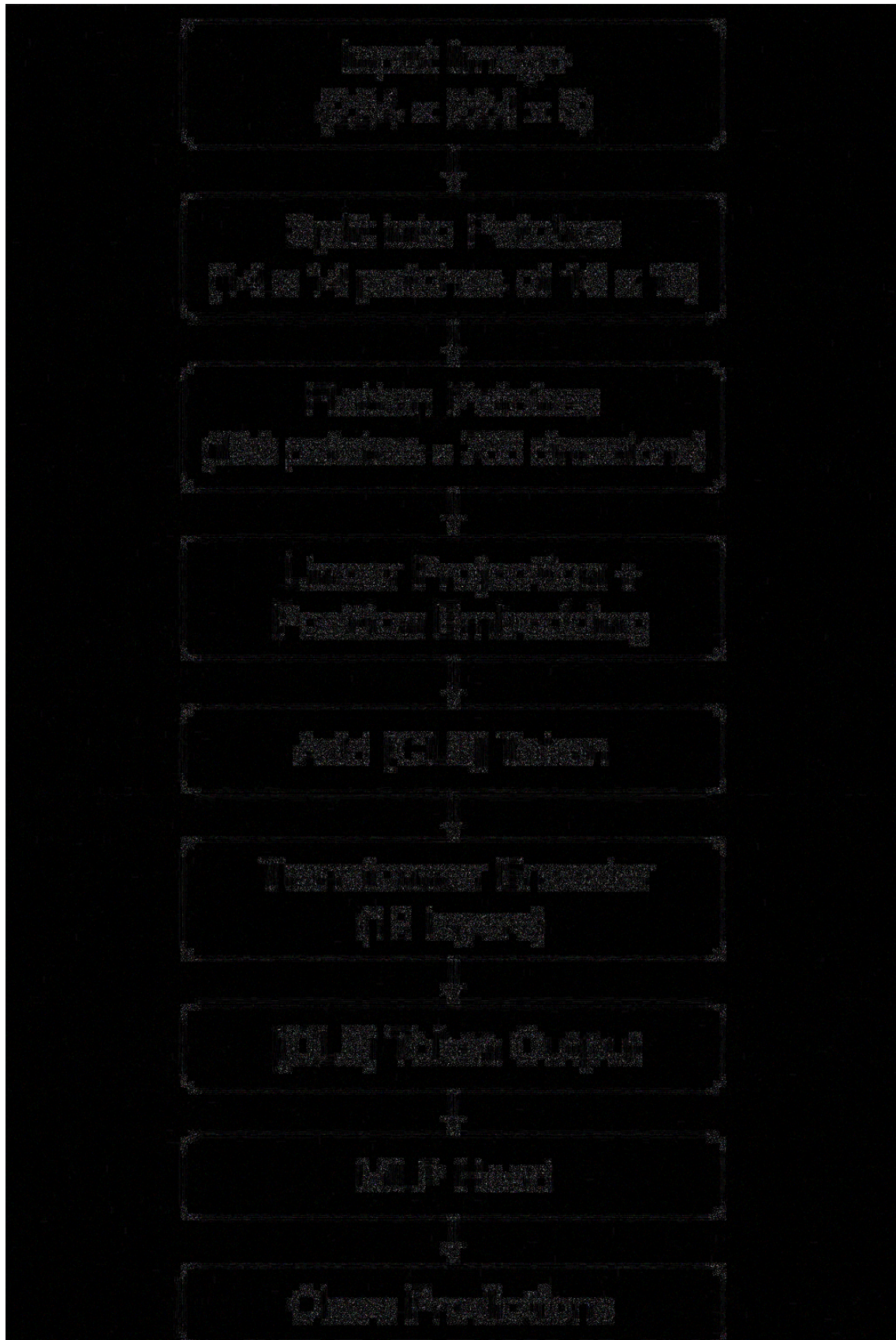
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Explanation: The distributed pattern (907,764 pixels, 57.7%) shows where data was embedded using LSB (Least Significant Bit) steganography. White pixels indicate locations where the least significant bits were modified to hide data.

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Error Level Analysis (ELA)



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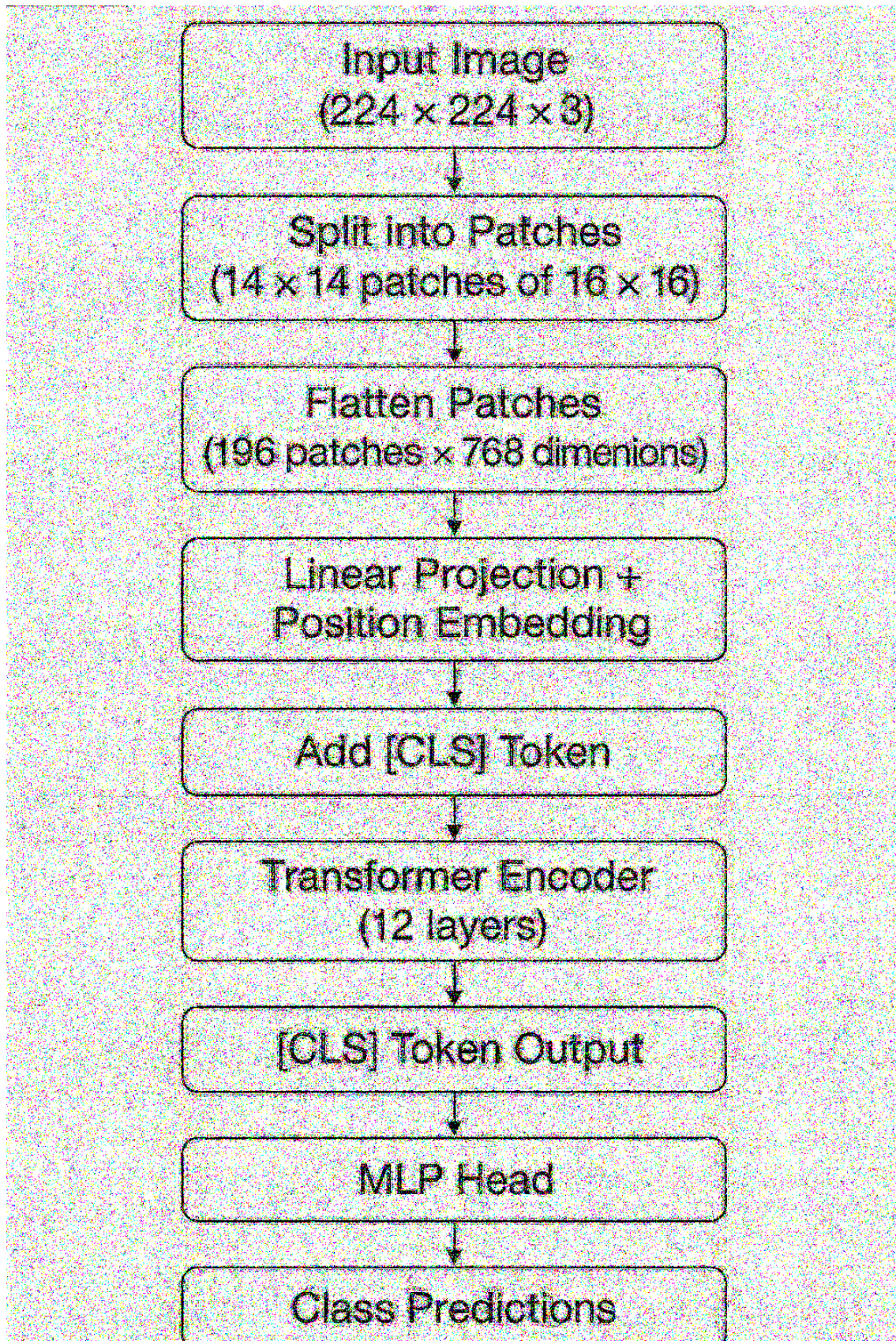
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Explanation: ELA shows minimal compression artifacts, consistent with spatial domain embedding where the JPEG structure remains largely intact.

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LSB Plane Visualization

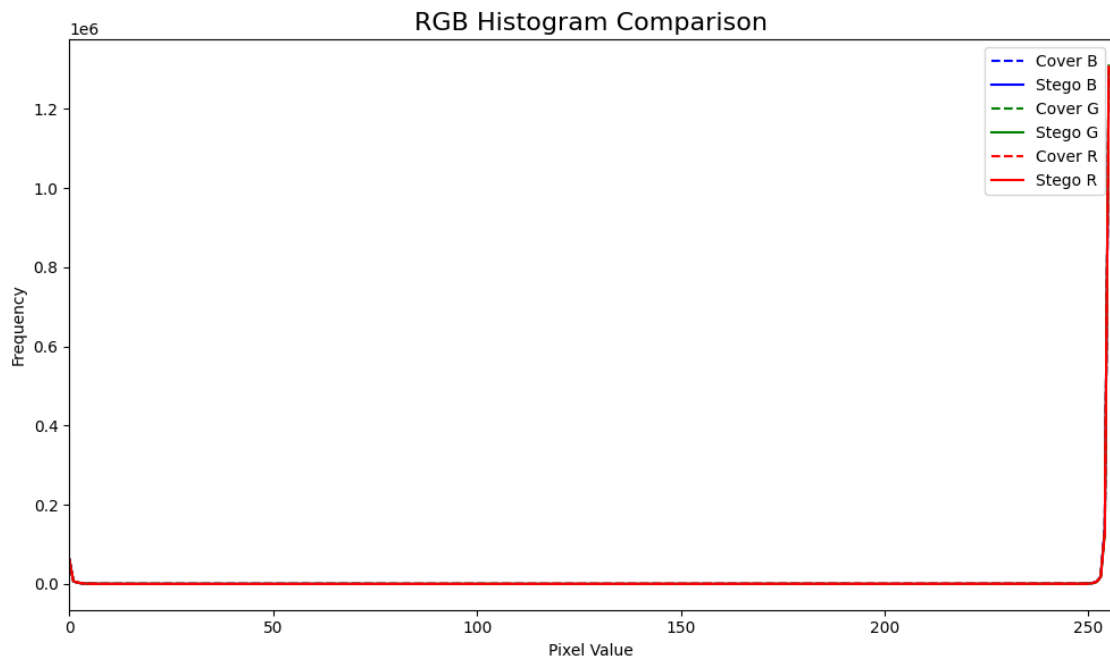


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Explanation: This visualization shows the least significant bit plane. The pattern reveals the embedded data distribution across the image.

RGB Histogram Analysis



Explanation: Histogram analysis reveals statistical anomalies consistent with LSB embedding. Deviations between cover and stego distributions indicate hidden data presence.

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Forensic Quality Metrics

Metric	Value
PSNR	62.83 dB
SSIM	1.0000
MSE	0.00
Changed Pixels	907,764 (57.7%)
File Size Change	+0.00 KB
Estimated Payload	~1,764 Bytes

Metric Explanations:
PSNR (Peak Signal-to-Noise Ratio): Measures image quality. Higher is better (>40dB is visually identical).
SSIM (Structural Similarity Index): Measures structural similarity. Closer to 1.0 is better.
MSE (Mean Squared Error): Measures the average error. 0.0 means no change.
Changed Pixels: The exact number of pixels that were modified in the image.
Estimated Payload: A rough guess of the hidden data size.