

Types of Invisible Digital Watermarking Methods

1) Domain-based methods

- Spatial-domain: LSB embedding, Patchwork/statistical embedding
- Frequency-domain: DCT-based, DWT-based, Fourier/DFT-based, SVD-based
- Hybrid approaches (e.g., DWT–SVD, DCT–SVD)

2) Modulation & coding strategies

- Additive watermarking
- Multiplicative watermarking
- Quantization Index Modulation (QIM)
- Spread-spectrum watermarking
- Phase-based embedding

3) Detection / extraction regimes

- Non-blind (requires original)
- Semi-blind (requires some side info)
- Blind (no original needed)

4) Robustness / purpose categories

- Robust watermarks (copyright)
- Fragile watermarks (tamper detection)
- Semi-fragile watermarks (authenticity check)
- Reversible watermarking (lossless, e.g., medical images)

5) Content-dependent & perceptual approaches

- Perceptual masking (human perception-aware)
- Content-adaptive embedding (based on texture/edges/audio masking)