

# Perceptual quantization parameter selection for crime scene investigation tool images

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Frontiers of Computer Science, DOI: [10.1007/s11704-022-2068-7](https://doi.org/10.1007/s11704-022-2068-7)

# Problems & Ideas

- Problems of conventional quantization parameter selection:
  - Existing approaches were designed for ordinary image, didn't consider typical characteristics of crime scene investigation tool image;
  - When selecting QP, the existing approaches treat crime tool regions and background regions equally.
- Ideas: Using more rate resources to focus on optimizing the perceptual quality of crime tool regions.



Crime scene investigation tool image. Red box marking region: crime tool region, contains significantly important and sometimes even unique information for solving crime cases and court trials; Other region: background region, contains less useful information.

# Main Contributions

- Contributions:
  - A novel two-step Lagrangian R-D optimization method to select the matched quantization parameters for crime tool regions and background regions;
  - A crime tool regions acquisition method: quantitative evaluation and effective application in quantization parameters selection.



(a) Proposed method

(b) [1-3]

(c) [4]

(d) [5]

Reconstructed images of the “Dagger3inSoil” test image yielded by each method. (a): Reconstructed images using the proposed method, has the clearest crime tool regions and the highest perceptual quality; (b)-(d): Reconstructed images using the methods proposed in [1-3], [4], and [5], has vague crime tool regions and low perceptual quality.