

Cognitech® FiA 64 Feature List

*Items marked with a hashtag (#) indicate unique forensic capabilities that are proprietary ONLY to Cognitech, Inc. due to issued and pending US and International patents of Cognitech, Inc.

*Items marked with marking  indicate the new or highly improved forensic capabilities that are part of the release.

Items marked with an asterisk () are designated computational design capabilities that are the leading edge of forensic technology and are not commonly available to other competitors in the field.

Cognitech FiA 64®

General

1. Cognitech is the first and oldest forensic video company, with **25 years of experience** in providing software and hardware solutions for law enforcement and forensic professionals.
2. Cognitech is **constantly evolving** its primary software package, Cognitech® TriSuite®+, which now adds Forensic Image Authentication 64 (FiA 64).
3. All functions in FiA 64 have been **tested in peer review scientific publications**.
4. FiA 64 was developed for professional forensic expert use and meets the **repeatability** required for expert witness testimony.
5. Cognitech's **hands-on training program and customer support** provide the end-user with the skills and support to handle any casework.
6. Cognitech has been **servicing the forensic community since 1988** and prides itself on **excellent customer service**.

Supported File Formats

7. Most **image file formats** are supported including: BMP, GIF, JPG, JPG 2000, PBM, PCX, PGM, PNG, PPM, RAS, TIF.

Authentication Tools

8. **Structure Analysis:** This function analyzes the file's structure and reports data based on standard JPEG markers and image editors' signatures.
9. **EXIF:** Extract file EXIF and reveal details about camera brand, model, serial number, camera settings (Exposure, etc) , editing/tampering software, resolution, date, time and GPS coordinates.
10. **JPG QT:** Extract luminance and chrominance quantization tables and compare against Cognitech Image Authentication Database for possible matches. These tables can be kept up to date using Cognitech's Online Update service.
11. **JPG DCT:** Take DC and AC DCT coefficients and plot their histograms to reveal traces of JPEG recompression or indicate that an evidence image is consistent with an original.
12. **Compression Level Analysis:** Investigate for possible traces of image (re)compression, for each Red, Green, Blue (RGB) layer separately, and for their mean.
13. **Color Filter Array:** Explores the CFA interpolation process inside a digital photo camera to assess the correlation in each RGB layer. The results are displayed for each Red, Green, Blue layer (RGB) separately, and for their mean.
14. **G/B Screen:** Looks for traces of image inconsistencies left by green or blue screen removals by digital editing. (#)
15. **Color Spaces:** Splits evidence images into Red, Green, Blue, Cyan, Magenta, Yellow, Black, Hue, Saturation, Luminance Layers to detect previous brightness/contrast or histogram equalization.
16. **DCT Map:** Computes, displays and saves the Discrete Cosine Transform map of the evidence image. It can reveal local traces of image manipulation like content aware or copy/paste between different images.
17. **CL Map:** Computes, displays and saves the Compression Level analysis map of the evidence image. This function can reveal local traces of image manipulation like content aware or copy/paste between different images.
18. **CFA Map:** Computes, displays and saves the Color Filter Array map of the evidence image. This function can reveal local traces of image manipulation like content aware or copy/paste between different images.
19. **Differential Map:** Differential map algorithm is unique among other image analysis tools, and detects and displays local inconsistencies due to image tampering processes. (#)
20. **ELA:** Error Level Analysis (ELA) function computes the arithmetic difference between evidence image and a series of JPG recompressed versions of it, revealing possible traces of local image tampering.
21. **ADELA:** Adaptive Error Level Analysis (ADELA) function computes the adaptive arithmetic difference between evidence image and a series of JPG recompressed versions of it, revealing possible traces of local image tampering. This is a unique algorithm and can only be found FiA 64. (#)
22. **SELA:** Smart Error Level Analysis (STELA/SELA) function computes the smart adaptive arithmetic difference between evidence image and a series of JPG recompressed versions of it, revealing

possible traces of local image tampering. This is a unique algorithm and can only be found FiA 64. (#)

23. **GHOST:** The ELA Ghost analysis can reveal possible traces of image recompression through visual inspection of breaks in plot chart results.
24. **Corr. Map:** Computes and displays the correlation between neighboring pixels and blocks of pixels. It can reveal local traces of image manipulation like content aware or copy/paste between different images.
25. **Probability Map:** Computes and displays the probability distribution between neighboring pixel blocks. It can reveal local traces of image manipulation like content aware or copy/paste between different images.
26. **BA Map:** Computes and displays the blocking artifacts of image data. It can reveal local traces of image manipulation like content aware or copy/paste between different images.
27. **ADJPEG:** Aligned Double JPEG function checks for inconsistencies left by local tampering and double JPEG compression. It can reveal local traces of image manipulation like content aware or copy/paste between different images.
28. **NADJPEG:** Non-Aligned Double JPEG) function checks for inconsistencies left by local tampering and double JPEG compression nonaligned blocks. It can reveal local traces of image manipulation like content aware or copy/paste between different images.
29. **Hist Eq:** Applies Histogram Equalization on each Red, Green, Blue channel, and the overall RGB image.
30. **HP Filter:** Detection of image tampering traces, like content-aware or copy/paste between different images. The HP analysis is based on Custom High Pass Filtering technique. (*)
31. **PRNU Residue:** Digital camera's matrix (pixel sensor) is an optic to electric energy transducer. Its Photo Response Non-Uniformity (PRNU) can be used to detect copy/paste traces between images generated by different cameras or other types of image tampering.
32. **Clone Fusion:** automatic search for clones or copy/paste areas from the same image.
33. **PRNU Camera:** verify the suspect camera and compare the evidence image against reference images with the same resolution. Reports Correlation Coefficient, Log Likelihood Ratio (LR), and a numeric to verbal scale conversion of LR.
34. **Difference (Δ):** Computes the difference between evidence (A) and a reference image (B). The numeric results are displayed as: arithmetic absolute difference, correlation coefficient, and mean quadratic difference.

Workflow Features

35. **File Batch:** Runs all FiA 64 Authentication Tools on an image (where possible).
36. **Sort Folder:** Analyze all the image files from a directory and detect traces left by different image editors and other file structure inconsistencies, and copy the analyzed files into folders and subfolders.
37. **Folder Batch:** Run a File Batch on all images in a designated directory.

38. **Fast Folder Batch:** Runs only a certain select few Authentication Tools on all images in a designated directory. The selection of Authentication Tools can be customized by the user.
39. **Archive Case:** Places all results of a current case into a zip file.
40. **Online Update:** Cognitech Online update provides users with updated database and image tools signatures for up to date comparison and analysis. (Requires active software support agreement with Cognitech, Inc.) (*)