

Cognitech Inc.

Forensic Enhancement Software

Video Investigator Highlights

Video Investigator is designed to work with video files and still images alike. There are a variety of methods that can be used in either scenario, which is what makes Video Investigator such a powerful tool. No other software will offer the vast array of filters that Video Investigator offers its users. Listed below are a number of the tools available in this powerful software package.

1. File Conversion
2. Deblur Filters
3. Demultiplexing
4. Denoise Filters
5. Detection Filters
6. Editing
7. Enhancement
8. Histogram Editor
9. Segmentation
10. Tracking
11. Transform
12. Zoom
13. Velocity
14. Reconstruction
15. Photogrammetry

1. File Conversion

This tool allows you to convert your file in a variety of ways. RGB to YUV, 8-bit to 16-bit, 8-bit to 32 bit, etc.

2. Deblur Filters

These filters allow you to deblur single frame or movie clips. There are 5 deblur filters that work in different ways to deblur your image. The Sharpen and Weiner filters are classic techniques that work very quickly. While Movie Deblur and Total Variation are techniques that Cognitech scientists developed. Movie Deblur, Total Variation and the Weiner Filter all allow different blur kernels to be utilized which allow customization for different types of blurring that may be encountered in processing your images. Motion Deblurring is a new technique developed by Cognitech scientist that utilizes image registration to determine the motion of a video and deblur it based on that motion.

3. Demultiplexing

This allows you to demultiplex a video based on its visual content. This is not based on a so-called quiet zone as in some of our competitor's products. The quiet zone approach will not work if the scene in the video changes drastically. Our approach looks at the image directly and sorts it to the appropriate movie. This allows the user to demultiplex

all of the camera views into separate video clips. It is a universal demultiplexer since it does not read the multiplexer encoding on the videotape.

4. Denoise Filters

These 6 denoising filters allow you to remove noise in single frames or movie clips. The Median and Average Frames technique are based on classic image processing techniques. Movie Denoise, Remove Extrema, Total Variation Denoise, and JPEG Deblocker are all based on techniques developed by Cognitech scientists. Average Frames works well when there is no motion in your video; motion is addressed with our Reconstruction Methods.

5. Detection Filters

The detection filters perform a few different tasks. Frame Difference allows you to view the intensity difference between two frames of a movie. Gradient is a visualization tool that allows you to view the different adjacent pixels. Motion Detection detects motion in a video and outputs a boundary image of that movement. Edge Detection is similar to Motion Detection but it detects edges within the video and outputs it to a boundary image.

6. Editing

The editing filters allow you to cut and concatenate videos. Concatenation allows you to combine two different movies. Translational Crop allows you to use the glyph tools in Video Investigator to cut a movie to focus in on a object of interest.

7. Enhancement

User can perform histogram equalization technique to improve the contrast in the image.

8. Histogram Editor

User can adjust the Red-Green-Blue (RGB) or Hue-Saturation-Intensity values in an image or movie.

9. Segmentation

Allow you to visualize analyze the content of a still or video. These techniques were developed by Cognitech scientists and used in the Reginald Denny investigation.

10. Tracking

These two techniques, Tracking and 3D Shape Matching are techniques again developed by Cognitech scientists and used to automatically track motion in a video.

11. Transform

These are filters allow the user to different functions. Mirror Image allows the user to rotate or flip the image or video in different directions. Geometric is used to zoom/reflection, shear (deformation of a rectangle into a parallelogram), rotate and translate an image or movie. Wavelet is an advanced filter that demonstrates the 2D dyadic wavelet transform for spline wavelets of minimal support on a rectangular domain. Fourier is another advanced transform filter that computes the 2D discrete Fourier transformation of image.

12. Zoom

This filter allows the user to try 6 different techniques to rescale an image or movie. This allows for a better rescaling effect, as typical methods tend to use a pixel duplication method to rescale an image, which quickly leads to a stair-like effect called pixelation.

13. Velocity

These filters are the centerpieces to Video Investigator and its Reconstruction methods. These filters allow the user to estimate the motion in a video clip either automatically or by manual methods. These filters have been developed by Cognitech scientists and are the first step in performing a Reconstruction Technique. Correlation Matching, Line Segment Matching, Motion Segmentation, Phase Matching, Segmentation Shape Matching, and Shape Matching are all automatic registration methods and Manual Matching is a manual method that uses the glyphs feature in Video Investigator.

14. Reconstruction

These techniques use the velocity filters to perform different operations based on the motion estimated by the velocity filter. Frame Fusion allows the user to use the velocity information to reconstruct the movie using information from several frames to improve each frame and improve the quality of the movie. Mosaic Reconstruction uses the velocity information to reconstruct a single frame image based on the common information in all of the frames. Stabilization Reconstruction allows the user to use the velocity information to stabilize video footage and is very useful in visualizing what is going on in the movie. The Movie Stabilization Wizard is a tool that combines the velocity and reconstruction process into one filter and allows the user to calculate the motion automatically and to stabilize your movie and create a mosaic image of your movie. Panorama allows you to create a panoramic view of your movie using velocity information. All of these techniques have been developed by Cognitech scientists.

15. Photogrammetry

Photogrammetry is a technique that allows the user to go back to a crime scene, take several measurements of the crime scene and estimate the height of a suspect or object in the scene.