Bio Image Operation script operations (v1.6.440.1 / 2020-11-14)

SetPath (Path)

Set path for relative file paths (by default path of current script file)

- Path: File path ("path")

CreateImage (Width, Height, ColorMode, Red, Green, Blue)

Create a new image

- Width: Width in pixels (numeric value)
- Height: Height in pixels (numeric value)
- ColorMode: Color mode (GrayScale, Color, ColorAlpha)
- Red: Red color component (numeric value between 0 and 1)
- Green: Green color component (numeric value between 0 and 1)
- Blue: Blue color component (numeric value between 0 and 1)

OpenImage (Path, Start, Length, Interval)

Open image file(s) for processing, accepts file name pattern

- Path: File path ("path")
- Start: Start (time reference as (hours:)minutes:seconds, or frame number)
- Length: Length (time reference as (hours:)minutes:seconds, or frame number)
- Interval: Interval in number of frames (numeric value)

OpenVideo (Path, API, Start, Length, Interval)

Open video file(s) and process frames, accepts file name pattern (ffmpeg formats supported)

- Path: File path ("path")
- API: OpenCV API code (See OpenCV API codes) (numeric value)
- Start: Start (time reference as (hours:)minutes:seconds, or frame number)
- Length: Length (time reference as (hours:)minutes:seconds, or frame number)
- Interval: Interval in number of frames (numeric value)

OpenCapture (API, Path, Source, Width, Height, Interval)

Open capturing from video (IP) path or camera source

- API: OpenCV API code (See OpenCV API codes) (numeric value)
- Path: File path ("path")
- Source: Camera source (#) (numeric value)
- Width: Width in pixels (numeric value)
- Height: Height in pixels (numeric value)
- Interval: Interval in number of frames (numeric value)

SaveImage (Path, Label, Start, Length)

Save image to file

- Path: File path ("path")
- Label: Label id (string)

- Start: Start (time reference as (hours:)minutes:seconds, or frame number)
- Length: Length (time reference as (hours:)minutes:seconds, or frame number)

SaveVideo (Path, Label, Start, Length, Fps, Codec)

Create video file and save image to video file (supports installed encoders)

- Path: File path ("path")
- Label: Label id (string)
- Start: Start (time reference as (hours:)minutes:seconds, or frame number)
- Length: Length (time reference as (hours:)minutes:seconds, or frame number)
- Fps: Frames per second (numeric value)
- Codec: Video encoding codec (4 character codec reference (FOURCC))

ShowImage (Label, Display)

Show image on screen (low priority screen updates)

- Label: Label id (string)
- Display: Display id (number 1 - 4)

StoreImage (Label)

Store current image in memory

- Label: Label id (string)

GetImage (Label)

Get specified stored image from memory

- Label: Label id (string)

Grayscale (Label)

Convert image to gray scale

- Label: Label id (string)

Color (Label)

Convert image to color

- Label: Label id (string)

ColorAlpha (Label)

Convert image to color with alpha channel

- Label: Label id (string)

GetSaturation (Label)

Extract saturation from image

- Label: Label id (string)

GetHsValue (Label)

Extract (HSV) Value from image

- Label: Label id (string)

GetHsLightness (Label)

Extract (HSL) Lightness from image

- Label: Label id (string)

Scale (Width, Height, Label)

Scale image

- Width: Width in pixels (numeric value)
- Height: Height in pixels (numeric value)
- Label: Label id (string)

Crop (X, Y, Width, Height, Label)

Crop image

- X: X position in pixels (numeric value)
- Y: Y position in pixels (numeric value)
- Width: Width in pixels (numeric value)
- Height: Height in pixels (numeric value)
- Label: Label id (string)

Mask (Label)

Perform mask on current image

- Label: Label id (string)

Threshold (Label, Level)

Convert image to binary using threshold level, or in case not provided using automatic Otsu method

- Label: Label id (string)
- Level: Threshold value (numeric value between 0 and 1)

Difference (Label)

Perform difference of current image and specified image

- Label: Label id (string)

DifferenceAbs (Label)

Perform absolute difference of current image and specified image

- Label: Label id (string)

Add (Label)

Adds specified image to current image

- Label: Label id (string)

Multiply (Factor)

Perform multiplication of all color channels by specified factor

- Factor: Multiplication factor (numeric value)

Invert (Label)

Invert image

- Label: Label id (string)

UpdateBackground (Label, Weight)

Add image to the adaptive background buffer

- Label: Label id (string)
- Weight: Weight value (numeric value between 0 and 1)

UpdateAverage (Label, Weight)

Add image to the average buffer

- Label: Label id (string)
- Weight: Weight value (numeric value between 0 and 1)

ClearSeries ()

Clear image series buffer

AddSeries (Label, Maximum)

Add image to image series buffer

- Label: Label id (string)
- Maximum: Maximum number of images to keep (numeric value)

GetSeriesMedian ()

Retrieve median image of image series buffer

AddAccum (Label, AccumMode)

Add image to the accumulative buffer

- Label: Label id (string)
- AccumMode: Accumulation mode (Age, Usage)

GetAccum (Power, Palette)

Retrieve the accumulative buffer and convert to image

- Power: Exponential power of value range (1E-[power] ... 1) (numeric value)
- Palette: Palette (GrayScale, Heat, Rainbow)

CreateClusters (Tracker, MinArea, MaxArea)

Create clusters; auto calibrate using initial images if no parameters specified

- Tracker: Tracker id (string)
- MinArea: Minimum area in number of pixels (numeric value)
- MaxArea: Maximum area in number of pixels (numeric value)

CreateTracks (Tracker, MaxMove, MinActive, MaxInactive)

Create cluster tracking; auto calibrate using initial images if no parameters specified

- Tracker: Tracker id (string)
- MaxMove: Maximum movement distance (single frame) (numeric value)
- MinActive: Minimum number of frames being active before state is active (numeric value)
- MaxInactive: Maximum number of frames being inactive before state is inactive (numeric value)

CreatePaths (Tracker, Distance)

Create common path usage

- Tracker: Tracker id (string)
- Distance: Maximum path distance (numeric value)

DrawClusters (Label, Tracker, DrawMode)

Draw clusters

- Label: Label id (string)
- Tracker: Tracker id (string)
- DrawMode: (Combination of) draw mode(s) (None, Point, Circle, Box, Angle, Label, LabeIn, Track, Tracks, Fill, ClusterDefault, TracksDefault)

DrawTracks (Label, Tracker, DrawMode)

Draw tracked clusters

- Label: Label id (string)

- Tracker: Tracker id (string)
- DrawMode: (Combination of) draw mode(s) (None, Point, Circle, Box, Angle, Label, Labeln, Track, Tracks, Fill, ClusterDefault, TracksDefault)

DrawPaths (Label, Tracker, PathDrawMode, Power, Palette)

Draw common paths

- Label: Label id (string)
- Tracker: Tracker id (string)
- PathDrawMode: Path draw mode (Age, Usage, Usage2, Links, LinksMove)
- Power: Exponential power of value range (1E-[power] ... 1) (numeric value)
- Palette: Palette (GrayScale, Heat, Rainbow)

SaveClusters (Path, Tracker, Format, Contour)

Save clusters to CSV file

- Path: File path ("path")
- Tracker: Tracker id (string)
- Format: Output format (ByTime, ByLabel, Split)
- Contour: Extract contours (true / false)

SaveTracks (Path, Tracker, Format, Contour)

Save cluster tracking to CSV file

- Path: File path ("path")
- Tracker: Tracker id (string)
- Format: Output format (ByTime, ByLabel, Split)
- Contour: Extract contours (true / false)

SavePaths (Path, Tracker)

Save paths to CSV file

- Path: File path ("path")
- Tracker: Tracker id (string)

ShowTrackInfo (Tracker, Display)

Show tracking information on screen

- Tracker: Tracker id (string)
- Display: Display id (number 1 - 4)

DrawTrackInfo (Label, Tracker)

Draw tracking stats on image

- Label: Label id (string)
- Tracker: Tracker id (string)

SaveTrackInfo (Path, Tracker)

Save tracking information to CSV file

- Path: File path ("path")
- Tracker: Tracker id (string)

SaveTrackLog (Path, Tracker)

Save tracking log to CSV file

- Path: File path ("path")
- Tracker: Tracker id (string)

DrawLegend (Label, Display, Position)

Draw legend

- Label: Label id (string)
- Display: Display id (number 1 - 4)
- Position: Draw position (Full, TopLeft, BottomLeft, TopRight, BottomRight)

Wait (MS)

Pause execution for a period (1000 ms default)

- MS: Time in milliseconds (numeric value)

Debug ()

Debug mode

Arguments: Required Optional