

Switching over to SimpleCV.

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SimpleCV¹, which stands for Simple Computer Vision, is an easy-to-use Python frame-work that bundles together open source computer vision libraries and algorithms for solving problems. The idea of this document is to provide a quick reference for switching from Matlab and OpenCV to SimpleCV.

Description	Matlab	OpenCV	SimpleCV
Reading an image	<code>imread('lenna.png')</code>	<code>cvLoadImage('lenna.png')</code>	<code>Image('lenna.png')</code>
Converting the image to RGB colorspace	<code>fill</code>	<code>CvtColor(bitmap, retVal, CV_BGR2RGB)</code>	<code>img.toRGB()</code>
Converting the image to BGR colorspace	<code>fill</code>	<code>CvtColor(bitmap, retVal, CV_RGB2BGR)</code>	<code>img.toBGR()</code>
Converting the image to HLS colorspace	<code>fill</code>	<code>CvtColor(bitmap, retVal, CV_RGB2HLS)</code>	<code>img.toHLS()</code>
Converting the image to HSV colorspace	<code>fill</code>	<code>CvtColor(bitmap, retVal, CV_RGB2HSV)</code>	<code>img.toHSV()</code>
Converting the image to XYZ colorspace	<code>fill</code>	<code>CvtColor(bitmap, retVal, CV_RGB2XYZ)</code>	<code>img.toXYZ()</code>

¹References : O'Reilly Publication, Practical Computer Vision with SimpleCV by Nathan Oostendorp, Anthony Oliver, and Katherine Scott.

Description	Matlab	OpenCV	SimpleCV
Converting the image to GRAY colorspace	fill	CvtColor(bitmap, retVal, CV_RGB2GRAY)	img.toGray()
Create a new, empty OpenCV bitmap	fill	SetZero(bitmap)	img.getEmpty(channels)
Full copy of the image	fill	Copy(bitmap, newimg)	img.copy()
Resize the image	fill	Resize(bitmap, scaled_bitmap)	img.resize(x,y)
Smooth the image		Smooth(r, ro, algorithm, win_x, win_y, sigma, spatial_sigma)	img.smooth(algorithm_name, aperature, sigma, spatial_sigma, grayscale)
Invert image			img.invert()
Horizontally mirror an image		Flip(bitmap, newimg_bitmap, 1)	img.flipHorizontal()
Vertically mirror an image		Flip(bitmap, newimg_bitmap, 0)	img.flipVertical()
Stretch filter on a greyscale image		Threshold(grayscale_bitmap, newimg, thresh_low, 255,CV_THRESH_TOZERO)	img.stretch(thresh_low, thresh_high)
Binary threshold of the image		Threshold(bitmap, bitmap, thresh, maxv, CV_THRESH_BINARY_INV)	img.binarize(thresh, maxv, blocksize, p)
Mean color of the image		cv.Avg(bitmap)[0:3]	img.meanColor()
Finds the FeatureSet strongest corners first		GoodFeaturesToTrack(GrayscaleBitmap, eig_image, temp_image, maxnum, minquality, mindistance, None)	img.findCorners(maxnum, minquality, mindistance)
Blobs are continuous light regions			img.findBlobs(threshval, minsize, maxsize, threshblocksize, threshconstant)
Finding the location of a known object		HaarDetectObjects2(EqualizedGrayscaleBitmap(), cascade.getCascade(), storage, scale_factor, use_canny)	findHaarFeatures(self, cascade, scale_factor, min_neighbors, use_canny)
Uploading the Image to Imgur or Flickr			img.upload(dest,api_key,api_secret,verbose)

Description	Matlab	OpenCV	SimpleCV
Draw a circle on the Image			img.drawCircle(ctr, rad, color, thickness)
Draw a line			img.drawLine(pt1, pt2, color, thickness)
Size of image		GetSize(bitmap)	img.size()
Split the image into a series of image chunks			img.split(cols, rows)
Split the channels of an image into RGB		Split(bitmap, b, g, r, None)	img.splitChannels(grayscale)
Images of R,G,B channels are recombined into a single image		Merge(b,g,r,None,retVal)	img.mergeChannels(r,b,g)
Apply a color correction curve in HSL space			img.applyHLSCurve(hCurve, lCurve, sCurve)
Apply a color correction curve in RGB space			img.applyRGBCurve(rCurve, gCurve, bCurve)
Applies Intensity to all three color channels			img.applyIntensityCurve(curve)
Returns image representing the distance of each pixel from a given color tuple			img.colorDistance(color)
Apply morphological erosion to a image		Erode(bitmap, retVal, kern, iterations)	img.erode(iterations)
Apply morphological dilation to a image		Dilate(bitmap, retVal, kern, iterations)	img.dilate(iterations)

Description	Matlab	OpenCV	SimpleCV
Histogram equalization on the image		cv.EqualizeHist(GrayscaleBitmap, Equalizedgraybitmap)	img.equalize()
Returns Image of the string			img.toString()
Applies erosion operation followed by a morphological dilation		MorphologyEx(bitmap, retVal, temp, kern, CV_MOP_OPEN, 1)	img.morphOpen()
The difference between the morphological dilation and the morphological gradient		MorphologyEx(Bitmap, retVal, temp, kern, CV_MOP_GRADIENT, 1)	img.morphGradient()
1D histogram(numpy array) of intensity for pixels in the image			img.histogram(numbins)
The histogram of the hue channel for the image			img.hueHistogram(bins)
Returns the peak hue values histogram of hues			img.huePeaks(bins)
Add two images		Add(imgBitmap, otherBitmap, newBitmap)	img.__add__(other)
Subtract two images		Sub(imgBitmap, otherBitmap, newBitmap)	img.__sub__(other)
Or two images		Or(imgBitmap, otherBitmap, newBitmap)	img.__or__(other)
Image division operation taking two images as input		Div(imgBitmap, otherBitmap, newBitmap)	img.__div__(other)
Raises every array element in image array to a power		Pow(imgBitmap, otherBitmap, other)	img.__pow__(other)

Description	Matlab	OpenCV	SimpleCV
Finds 2d and 1d barcodes in the image			img.findBarcode(zxing_path)
Finds line segments in the image		HoughLines2(em, CreateMemStorage(), CV_HOUGH_PROBABILISTIC, 1.0, CV_PI/180.0, threshold, minlinelength, maxlinegap)	img.findLines(threshold, minlinelength, maxlinegap, cannyth1, cannyth2)
Finds a chessboard within that image		FindChessboardCorners(EqualizedGrayscaleBitmap, dimensions, CV_CALIB_CB_ADAPTIVE_THRESH + CV_CALIB_CB_NORMALIZE_IMAGE)	img.findChessboard(dimensions, subpixel)
Canny edge detection method		Canny(GrayscaleBitmap, edgeMap, t1, t2)	img.edges(t1, t2)
function rotates an image around a specific point by the given angle		GetRotationMatrix2D(point , angle, scale, rotMat)	img.rotate(angle, fixed, point, scale)
return a shear-ed image from the cornerpoints		GetAffineTransform(src, cornerpoints, aWarp)	img.shear(cornerpoints)
Function for warp performs an affine rotation		cv.WarpPerspective(imgBitmap, retVal, rotMatrix)	img.transformPerspective(rotMatrix)
Returns the RGB value for a particular image pixel		Get2D(Bitmap, y, x)	img.getPixel(x, y)
Returns the gray value for a particular image pixel		Get2D(GrayscaleBitmap(), y, x)	img.getGrayPixel(x, y)
Returns a single column of RGB values from the image		GetCol(imgBitmap, column)	img.getVertScanline(column)
Returns a single row of RGB values from the image		GetRow(imgBitmap, row)	img.getHorzScanline(row)

Description	Matlab	OpenCV	SimpleCV
Returns a single column of gray values from the image		GetCol(imgGrayscaleBitmap, column)	getVertScanlineGray(column)
Returns a single row of gray values from the image		GetRow(imgGrayscaleBitmap, row)	getHorzScanlineGray(row)
Crops the image based on parameters			img.crop(x , y, w, h, centered)
Returns the selected region.			img.regionSelect(x1, y1, x2, y2)
Clears out the entire image		SetZero(Bitmap)	img.clear()
Draws the string on the image at the specified coordinates.			img.drawText(text , x , y , color, fontsize)
Draw a rectangle on the image			img.drawRectangle(x,y,w,h,color,width,alpha)
Shows the current image		ShowImage("Image" , image)	img.show(type)
Push a new drawing layer onto the back of the layer stack			img.addDrawingLayer(layer)
Insert a new layer into the layer stack at the specified index			img.insertDrawingLayer(layer, index)
Remove a layer from the layer stack based on the layer's index			img.removeDrawingLayer(index)
Return a drawing layer based on the index			img.getDrawingLayer(index)
Remove all of the drawing layers			img.clearLayers()
Return the array of DrawingLayer objects			img.layers()
Return all DrawingLayer objects as a single DrawingLayer.			img.mergedLayers()