Cheatsheet for Image Processing and Analysis of Digital Images *by CRIC Hackathon I - 2015*
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Description	**MATLAB**	**Fiji (macro)**
Help	help command or lookfor command	Help menu
Open image	imread('filename')	open("path/file.tif")
Write image	imwrite('filename')	saveAs("Tiff", outputdir+name+".tif");
Write message	disp(' ')	print("The value is: ", 1+2);
Gaussian filter	H=fspecial('gaussian',...) e imfilter(image,H,...)	run("Smooth");
Adicionar ruído	imnoise	run("Add Noise");
Edge detection	edge(I); Canny,Prewit	run("Find Edges");

Otsu	graythresh(I)	setAutoThreshold("Otsu");
		setOption("BlackBackground", true);
		run("Convert to Mask");

Ler uma imagem para uma variável	a = imread('path/file.tif')	open("path/file.tif") a=getTitle(); <do something> selectWindow(a)
Adicionar imagens	a=b+c	imageCalculator("Add create", "myimage1.tif", "myimage2.tif"); rename("a");
GLCM (Haralick Textures)	graycomatrix + graycoprops	http://rsb.info.nih.gov/ij/plugins/texture.html

Otsu		setAutoThreshold("Otsu"); run("Convert to Mask");
Rotular regiões	bwlabel	Set Measurements... Analyse Particles...
creates morphological structure element	SE = strel(shape,parameters)	
dilate image	I = imdilate(I, SE)	run(“Dilate”)
erose image	I = imerode(I, SE)	run(“Erode”)
reconstruct image	I = imreconstruct(marker,mask)	

Read image into a matrix	not needed	v=newArray(getWidth()*getHeight())
		for (x=0; x<getWidth(); x++)
		for (y=0; y<getHeight(); y++) {
		v[x+y*getWidth()] = getPixel(x, y);
		}//support array only

buscar valores em um vetor-matriz	find()	getResult("column",row)
tons de cinza	rgb2gray	run(“8-bit”)
Process an image in memory (matrix), no window.		setBatchMode(true)
Concatenate strings	filename = strcat('nome',int2str(4));	filename=’nome’+4
gradient magnitude and direction of an image	[Gmag, Gdir] =imgradient(I)	

Distance Transform	bwdist(bw)	Distance Map
reload figure (images, plots, etc)	figure(10), imagesc(I)	selectWindow("window_name")
Retain current plot when adding new plots	hold	not necessary; operations are incremental
Otsu multi-threshold		run("Threshold...") choose method
Install plugin		copy the plugin file (.jar) to the plugin folder of FIJI and restart
Histogram		getHistogram()
Interrupt execution	CTRL+C	<ESC>
string format	sprintf("Cell_%d",idCell)	print("Cell_"+idCell)
Fixed threshold		setThreshold(<valor>)
Color space transform	rgb2lab()	run("RGB to L*a*b* stack");
Organize windows	---	run("Tile");
Create directories		outputdir = "c:\\newDir\\" File.makeDirectory(outputdir);
Change image cell unit		setVoxelSize(1,1,1,"pixel")

TIPS

1. Use plugins-macro-record to get the syntax of an operation and its parameters
2. Notice that macros are subject to race-conditions (line n is executed before n-1); in order to prevent it, put wait(1000) and keep all the I/O to single portion of your code