

Here is how the comparator works:

It runs a specific command on matlab, and another specific command on scilab.

It then compares the last value of “ans” on each system. For most expressions or commands, this is the output you're expecting. Assignments and “expressions with just one variable name” do not change the value of ans, and this gives nothing to compare. It is good practice to explicitly include “ans = function()” in the commands that you will be running.

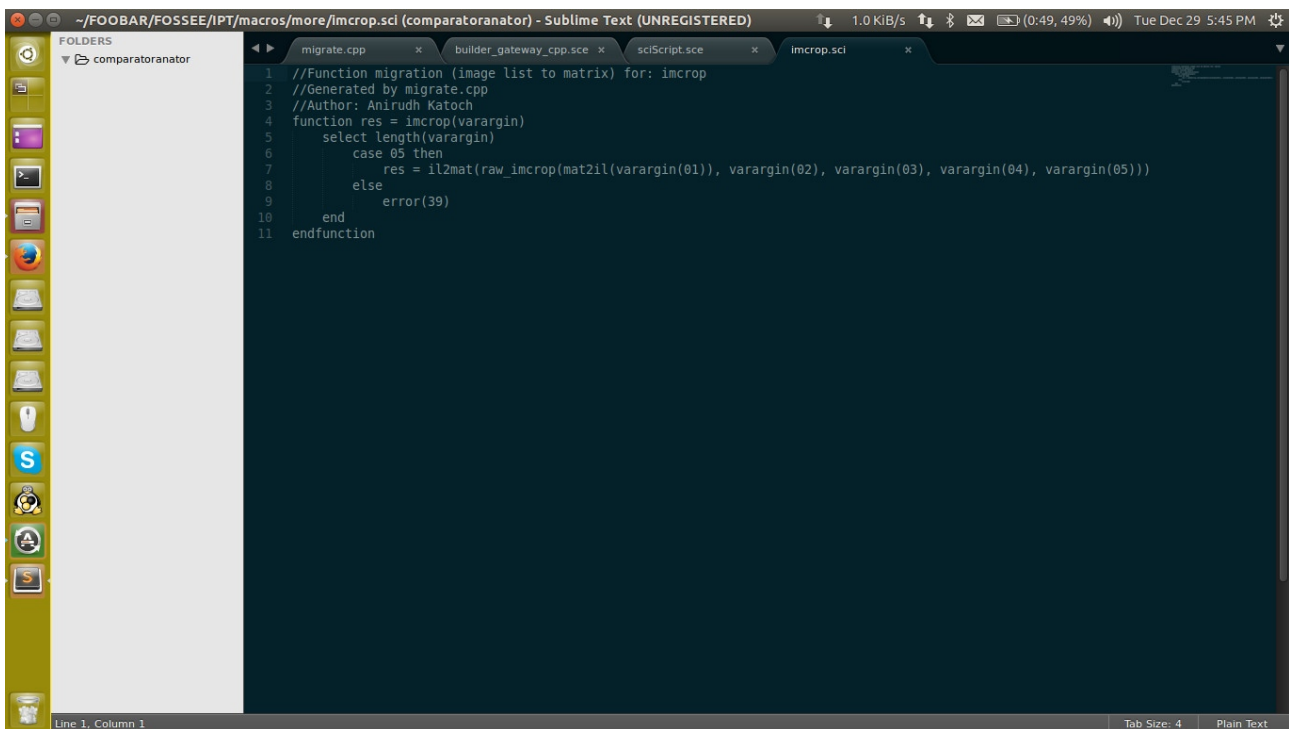
The method of comparison can be inspected (and changed) in macros/cmp.sci

Needless to say, you need matlab on your system.

Also needless to say, a 3d matrix in matlab and a list in scilab will not match. Thus, for the comparator to work, your functions must return a 3d matrix for an image (or 2d if only one channel) when you want to return an image.

This can be accomplished by wrapping your function in a scilab function and use the functions mat2il and il2mat to convert something from a matrix to an image list or an image list to a matrix respectively.

Many functions have already been wrapped. They can be seen under macros/more/



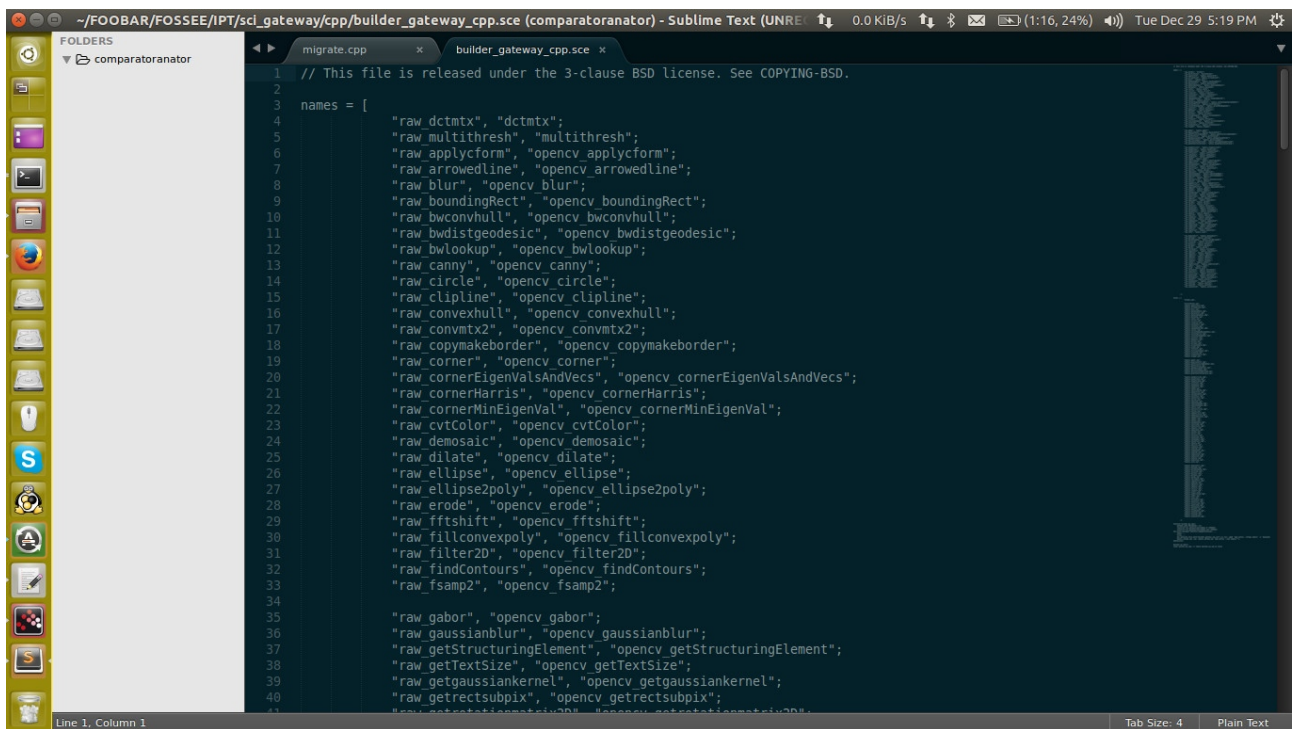
```
1 //Function migration (image list to matrix) for: imcrop
2 //Generated by migrate.cpp
3 //Author: Anirudh Katoch
4 function res = imcrop(varargin)
5     select length(varargin)
6     case 05 then
7         res = il2mat(raw_imcrop(mat2il(varargin(01)), varargin(02), varargin(03), varargin(04), varargin(05)))
8     else
9         error(39)
10    end
11 endfunction
```

You can make the wrapper functions by hand, or use the migrator tool. Instructions regarding the migrator tool can be found in dev-tools/migrator/input.txt

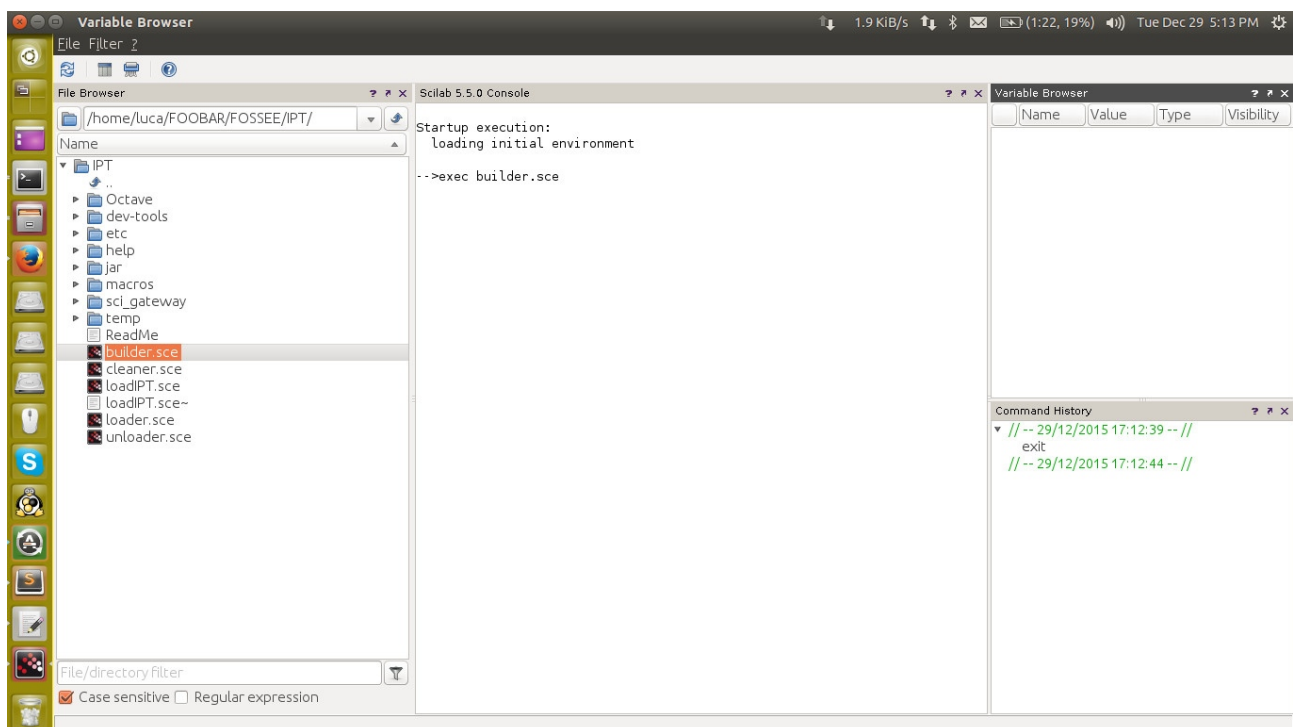
For examples of the wrapper functions, inspect the functions in macros/more/

(Tip: All scripts in the macros/more/ folder will be executed by loadIPT.sce, so you can just add your wrapper function there instead of explicitly putting them in a loader.)

This is what my builder_gateway_cpp.sce looks like. As you see, I renamed all the binded functions to avoid name conflicts with the wrappers.



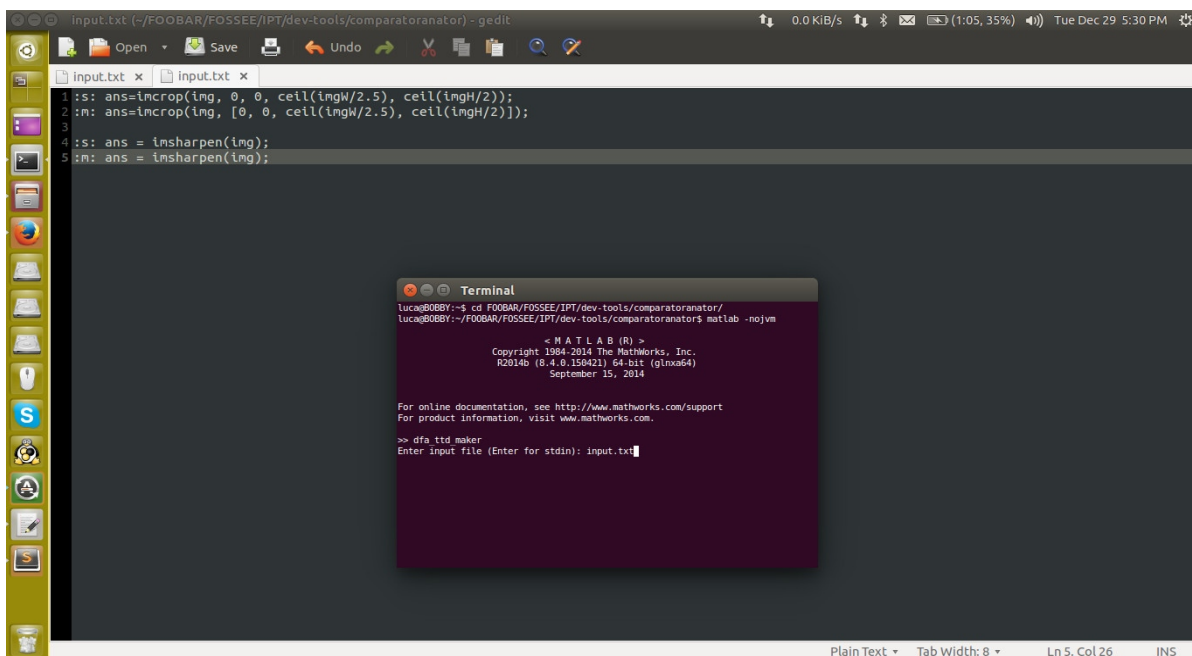
Before we start the comparatoranator, we must ensure all our functions for scilab are built properly. Run the builder for the cpp gateway.



Once we have built the toolbox, we can start working on the actual comparator. Since it's very hacky right now, there are a few steps that need to be taken first. I'll also explain a few things.

output.txt will contain a list of scilab command (after an :s:) and a matlab command (after an :m: on the next line) pairs. A comparison will be done after each pair of such commands. So, each pair of :s: & :m: will give a match, mismatch or a "Nothing to compare" (i.e. ans was not given a value for one of them.)

Somewhere during the making of the comparator, we decided that each command must run for a variety of images. Therefore, we also made an input.txt where you can specify the commands to run, and have access to the variables img (image), imgH (image height) and imgW (image width). It generates output.txt for you, where it loads every image in the given folders, assigns the right values to img, imgH and imgW, and runs the commands from input.txt for each one. You may think of output.txt as a cartesian product of input.txt and the images in the folders.



Here in the screenshot you can see my input.txt.

MATLAB AND SCILAB MAY HAVE DIFFERENT ROUNDING RULES, SO PLEASE USE "ceil" FUNCTION WHEN OPERATING ON imgW OR imgH

Manually write input.txt. Once your input.txt is ready, use your terminal to navigate to the comparatoranator folder and run "matlab -nojvm"

Within the matlab console, run "dfa_ttd_maker". When it asks for input, type in "input.txt". This will create an N x 2 cell matrix with scilab and matlab commands from input.txt as strings.

After this, open output.txt for writing with the matlab command "fd = fopen('output.txt', 'w')"

```

Comparing...
scilab command: ans=imcrop(img, 0, 0, ceil(imgW/2.5), ceil(imgH/2));
matlab command: ans=imcrop(img, [0, 0, ceil(imgW/2.5), ceil(imgH/2)]);

Comparing...
scilab command: ans = imsharpen(img);
matlab command: ans = imsharpen(img);

sciCmd =

mar jao plij

ttd is ready
' ans=imcrop(img, 0, 0, ceil(im... ' ans=imcrop(img, [0, 0, ceil(i...
' ans = imsharpen(img);' ' ans = imsharpen(img);'

>> fd = mopen('output
No completions found.
>> fd = mopen('output
No completions found.
>> fd = mopen('output
No completions found.
>> fd = fopen('output.txt', 'w')

```

After this, run “dfa(ttd, fd, 'sample_images/color/')” and “dfa(ttd, fd, 'sample_images/greyscale/')”
 You can skip one of them if you want only color or only greyscale.
 Then you can exit matlab by running the command “exit”

```

>> dfa(ttd, 4, 'sample_images/gre/')
No completions found.
>> dfa(ttd, 4, 'sample_images/gre/')
No completions found.
>> dfa(ttd, 4, 'sample_images/greyscale/')

ans =

/home/luca/F00BAR/F0SSEE/IPT/dev-tools/comparatoranator/sample_images/greyscale

>> exit
luca@BOBBY:~/F00BAR/F0SSEE/IPT/dev-tools/comparatoranator$ make
./entrypoint.sh

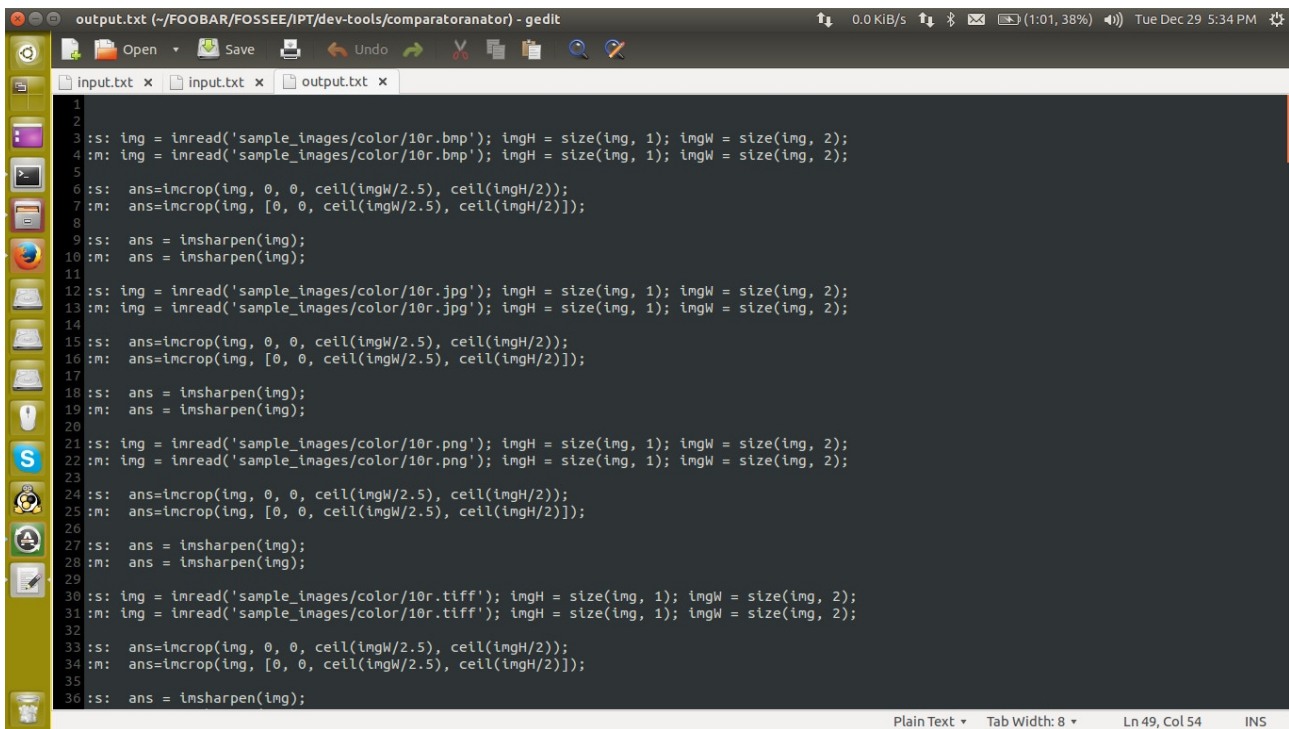
< M A T L A B (R) >
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R2014b (8.4.0.150421) 64-bit (glnxa64)
September 15, 2014

For online documentation, see http://www.mathworks.com/support
For product information, visit www.mathworks.com.

Enter input file (Enter for stdin): output.txt

```

If you inspect output.txt at this point, you will find it populated with commands.



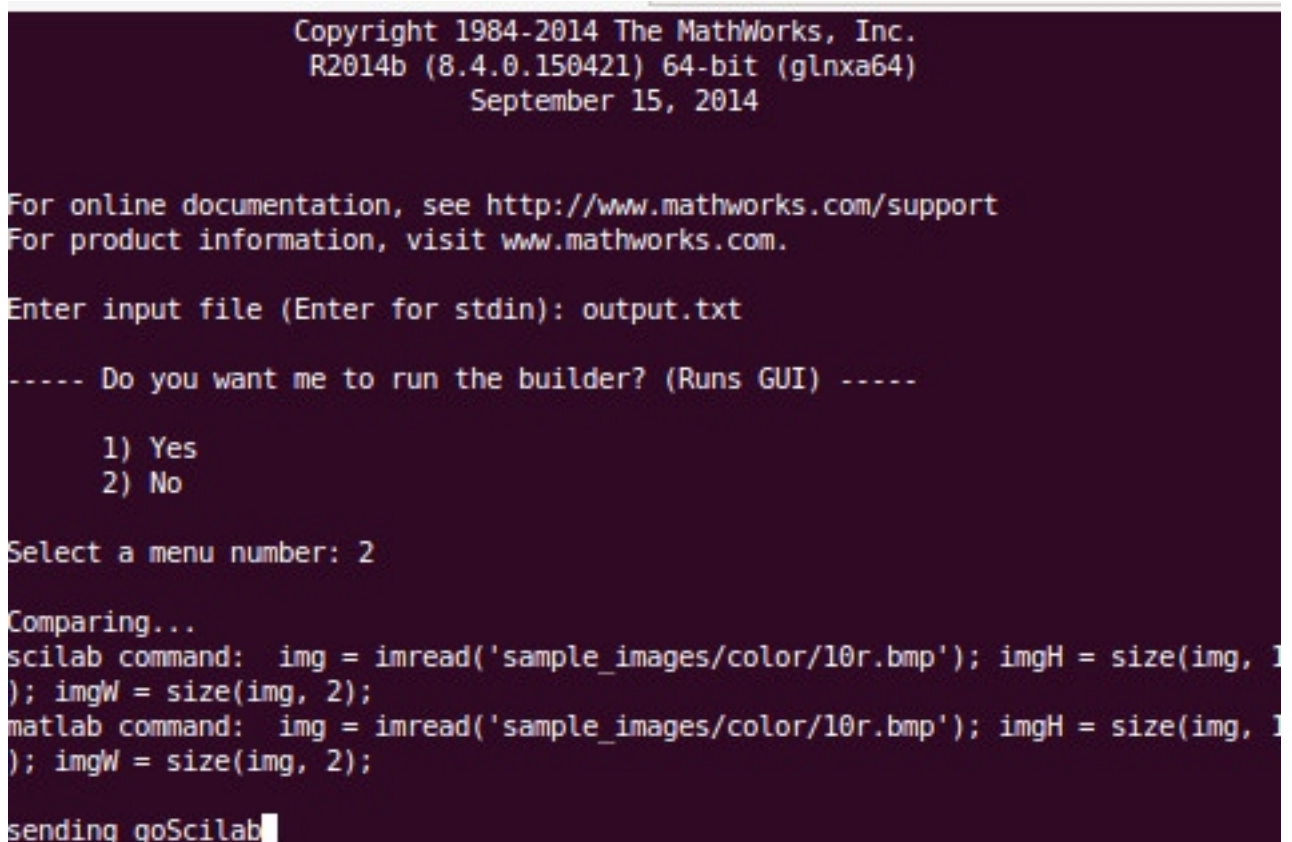
```
1
2
3:s: img = imread('sample_images/color/10r.bmp'); imgH = size(img, 1); imgW = size(img, 2);
4:m: img = imread('sample_images/color/10r.bmp'); imgH = size(img, 1); imgW = size(img, 2);
5
6:s: ans=imcrop(img, 0, 0, ceil(imgW/2.5), ceil(imgH/2));
7:m: ans=imcrop(img, [0, 0, ceil(imgW/2.5), ceil(imgH/2)]);
8
9:s: ans = imsharpen(img);
10:m: ans = imsharpen(img);
11
12:s: img = imread('sample_images/color/10r.jpg'); imgH = size(img, 1); imgW = size(img, 2);
13:m: img = imread('sample_images/color/10r.jpg'); imgH = size(img, 1); imgW = size(img, 2);
14
15:s: ans=imcrop(img, 0, 0, ceil(imgW/2.5), ceil(imgH/2));
16:m: ans=imcrop(img, [0, 0, ceil(imgW/2.5), ceil(imgH/2)]);
17
18:s: ans = imsharpen(img);
19:m: ans = imsharpen(img);
20
21:s: img = imread('sample_images/color/10r.png'); imgH = size(img, 1); imgW = size(img, 2);
22:m: img = imread('sample_images/color/10r.png'); imgH = size(img, 1); imgW = size(img, 2);
23
24:s: ans=imcrop(img, 0, 0, ceil(imgW/2.5), ceil(imgH/2));
25:m: ans=imcrop(img, [0, 0, ceil(imgW/2.5), ceil(imgH/2)]);
26
27:s: ans = imsharpen(img);
28:m: ans = imsharpen(img);
29
30:s: img = imread('sample_images/color/10r.tiff'); imgH = size(img, 1); imgW = size(img, 2);
31:m: img = imread('sample_images/color/10r.tiff'); imgH = size(img, 1); imgW = size(img, 2);
32
33:s: ans=imcrop(img, 0, 0, ceil(imgW/2.5), ceil(imgH/2));
34:m: ans=imcrop(img, [0, 0, ceil(imgW/2.5), ceil(imgH/2)]);
35
36:s: ans = imsharpen(img);
```

Now, on the terminal, run the command “make”. This will launch matlabScript.m

When asked for an input file, type in “output.txt”

When asked if you want to run the builder, type 2 (no), as we already ran the builder before and don't need to run it again until we edit a cpp file.

When the terminal says “Sending goScilab”, at this point, open another terminal window or tab, navigate to the same directory (comparinatoranator), and run the command “scilab-cli -f sciScript.sce &> scilogs.txt”



```
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R2014b (8.4.0.150421) 64-bit (glnxa64)
September 15, 2014

For online documentation, see http://www.mathworks.com/support
For product information, visit www.mathworks.com.

Enter input file (Enter for stdin): output.txt

----- Do you want me to run the builder? (Runs GUI) -----

    1) Yes
    2) No

Select a menu number: 2

Comparing...
scilab command:  img = imread('sample_images/color/10r.bmp'); imgH = size(img, 1); imgW = size(img, 2);
matlab command:  img = imread('sample_images/color/10r.bmp'); imgH = size(img, 1); imgW = size(img, 2);

sending goScilab
```



```
luca@BOBBY:~/FOOBAR/FOSSEE/IPT/dev-tools/comparatoranator$ scilab-cli -f sciScript.sce &> scilogs.txt
```

After the matlab script stops running, you will see the results in logs.txt
It will only show you whether command pairs matched, mismatched or resulted in nothing to compare. As seen in the screenshot here, imcrop matches for scilab and matlab, but imsharpen doesnt.

```
Nothing to compare for scilab  img = imread('sample_images/color/l0r.bmp'); imgH = size(img, 1); imgW = size(img, 2); and matlab  img = imread('sample_images/color/l0r.bmp'); imgH = size(img, 1); imgW = size(img, 2);.

Match for scilab  ans=imcrop(img, 0, 0, ceil(imgW/2.5), ceil(imgH/2)); and matlab  ans=imcrop(img, [0, 0, ceil(imgW/2.5), ceil(imgH/2)]);

Mismatch for scilab  ans = imsharpen(img); and matlab  ans = imsharpen(img);

Nothing to compare for scilab  img = imread('sample_images/color/l0r.jpg'); imgH = size(img, 1); imgW = size(img, 2); and matlab  img = imread('sample_images/color/l0r.jpg'); imgH = size(img, 1); imgW = size(img, 2);.

Match for scilab  ans=imcrop(img, 0, 0, ceil(imgW/2.5), ceil(imgH/2)); and matlab  ans=imcrop(img, [0, 0, ceil(imgW/2.5), ceil(imgH/2)]);

Mismatch for scilab  ans = imsharpen(img); and matlab  ans = imsharpen(img);

Nothing to compare for scilab  img = imread('sample_images/color/l0r.png'); imgH = size(img, 1); imgW = size(img, 2); and matlab  img = imread('sample_images/color/l0r.png'); imgH = size(img, 1); imgW = size(img, 2);.

;
```

If you want to know the exact results from a comparison and why something mismatched, then I have some bad news for you. Scilab currently doesn't allow saving lists, tlists or mlists in .mat files. However, disp() works for them. So the method being employed here is to go through the scilogs.txt file. It displays the outputs from both matlab and scilab when a mismatch is encountered.

```
Mismatch encountered:
(:,:,1)
255 112 0 0 0 0 0 4 0 0 0 0 255 0 0 0
255 94 0 0 4 9 3 6 5 0 0 255 0 0 0
255 110 0 0 0 0 8 0 0 0 0 255 0 0 0
255 100 0 0 0 0 0 0 0 0 0 255 0 0 0
255 96 0 0 0 0 0 0 0 0 0 255 0 0 0
255 109 0 0 0 255 255 255 255 255 0 255 0 255 255
255 94 0 0 0 255 255 255 255 255 0 255 0 255 255
255 100 0 0 0 255 255 252 255 255 0 255 0 255 255
255 100 0 0 0 255 255 255 255 255 0 255 0 255 255
255 100 0 0 0 255 255 255 255 255 0 255 0 255 255
(:,:,2)
0 105 255 106 0 0 0 0 0 0 0 255 0 0 0
0 87 255 98 0 3 0 6 6 0 0 255 0 0 0
0 104 255 104 0 0 0 0 0 0 0 255 0 0 0
0 94 255 96 0 0 0 0 0 0 0 255 0 0 0
0 89 255 92 0 0 0 0 0 0 0 255 0 0 0
0 102 255 87 0 255 255 255 255 255 0 255 0 255 255
0 88 255 70 0 255 255 255 255 255 0 255 0 255 255
0 94 255 86 0 255 255 252 255 255 0 255 0 255 255
0 94 255 79 0 255 255 255 255 255 0 255 0 255 255
0 94 255 78 0 255 255 255 255 255 0 255 0 255 255
(:,:,3)
0 255 0 88 255 0 0 0 0 0 0 255 0 0 0
0 255 0 80 255 0 0 4 5 0 0 255 0 0 0
0 255 0 87 255 0 0 0 0 0 0 255 0 0 0
0 255 0 79 255 0 0 0 0 0 0 255 0 0 0
0 255 0 74 255 0 0 0 0 0 0 255 0 0 0
0 255 0 70 255 255 255 255 255 255 0 255 0 255 255
0 255 0 52 255 255 255 255 255 255 0 255 0 255 255
0 255 0 69 255 255 255 249 255 255 0 255 0 255 255
0 255 0 62 255 255 255 252 255 255 0 255 0 255 255
0 255 0 61 255 255 255 252 255 255 0 255 0 255 255
and
(:,:,1)
245 85 90 0 43 0 3 0 0 0 0 255 0 0 0
252 57 90 0 49 0 3 7 6 0 0 255 0 0 0
241 85 90 0 43 0 4 0 0 0 0 255 0 0 0
251 71 90 0 48 0 4 0 0 0 0 255 0 0 0
253 65 90 0 0 0 4 0 0 0 0 255 0 0 0
245 84 90 0 0 255 255 255 255 255 0 255 0 255 255
251 59 90 0 0 253 255 255 255 255 0 255 0 255 255
253 71 90 0 0 255 255 251 255 255 0 255 0 255 255
```