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Demonstration of some basic matlab commands and

image processing tools

```
startup
cd TNM087-2015\Matlab\
impath = fullfile('C:','svn-enzo','TNM087-2015','Labs','Images');
```

07-Nov-2015 09:15:39

Construct filename, get image information

```
imname = 'scarves_camerawhite.jpg'
imfile = fullfile(impath,imname)
imfjpg = imfinfo(imfile)
```

```
imname =

scarves_camerawhite.jpg


imfile =

C:\svn-enzo\TNM087-2015\Labs\Images\scarves_camerawhite.jpg


imfjpg =

           Filename: 'C:\svn-enzo\TNM087-2015\Labs\Images
\scarves_camerawh...'
        FileModDate: '27-Aug-2015 13:56:00'
           FileSize: 2716366
             Format: 'jpg'
      FormatVersion: ''
              Width: 5796
             Height: 3870
           BitDepth: 24
```

```
          ColorType: 'truecolor'
    FormatSignature: ''
    NumberOfSamples: 3
       CodingMethod: 'Huffman'
      CodingProcess: 'Sequential'
            Comment: {}
```

Read and display image

```
cimname = 'scarves.CR2'
cimfile = fullfile(impath,cimname);
infcr2 = imfinfo(cimfile);

oimage = imread(fullfile(impath,imname));
figure(1)
subplot(1,2,1),imshow(oimage)
gim = rgb2gray(oimage);
subplot(1,2,2),imshow(gim)
figure(10)
imshowpair(oimage,gim,'montage')
whos
```

```
cimname =

scarves.CR2

  Name                 Size                    Bytes  Class
 Attributes

  ComputerAlias        1x2                         4  char

  ComputerName         1x11                       22  char

  DropBoxPath          1x24                       48  char

  MyBoxLiuPath         1x25                       50  char

  SVNPath              1x11                       22  char

  cimfile              1x47                       94  char

  cimname              1x11                       22  char

  gim                  3870x5796            22430520  uint8

  imfile               1x59                      118  char

  imfjpg               1x1                      2720  struct

  imname               1x23                       46  char
```

impath	*1x35*	*70*	*char*
infcr2	*4x1*	*597848*	*struct*
knownmachines	*1x4*	*528*	*cell*
oimage	*3870x5796x3*	*67291560*	*uint8*

You can also read from a website:

```
czim = imread('http://www.completedigitalphotography.com/CDP8/
Chapter16/scarves.cr2');
```

```
figure(2)
imshow(czim)
```

```
close all
```

Different image types and their operations

```
i16im = uint16(gim);
x=i16im(:);
fim = im2double(oimage);
disp([max(gim(:)),max(x),max(fim(:));...
    max(gim(:)+gim(:)),max(x+x),max(fim(:)+fim(:))])
disp([double(max(gim(:))),double(max(x)),double(max(fim(:)));...
    double(max(gim(:)+gim(:))),double(max(x
+x)),double(max(fim(:)+fim(:)))])
doubleim = double(oimage);
disp([max(fim(:)),max(oimage(:)),max(doubleim(:))])
```

```
  255  255    1
  255  255    2

   255   255     1
   255   510     2

    1  255  255
```

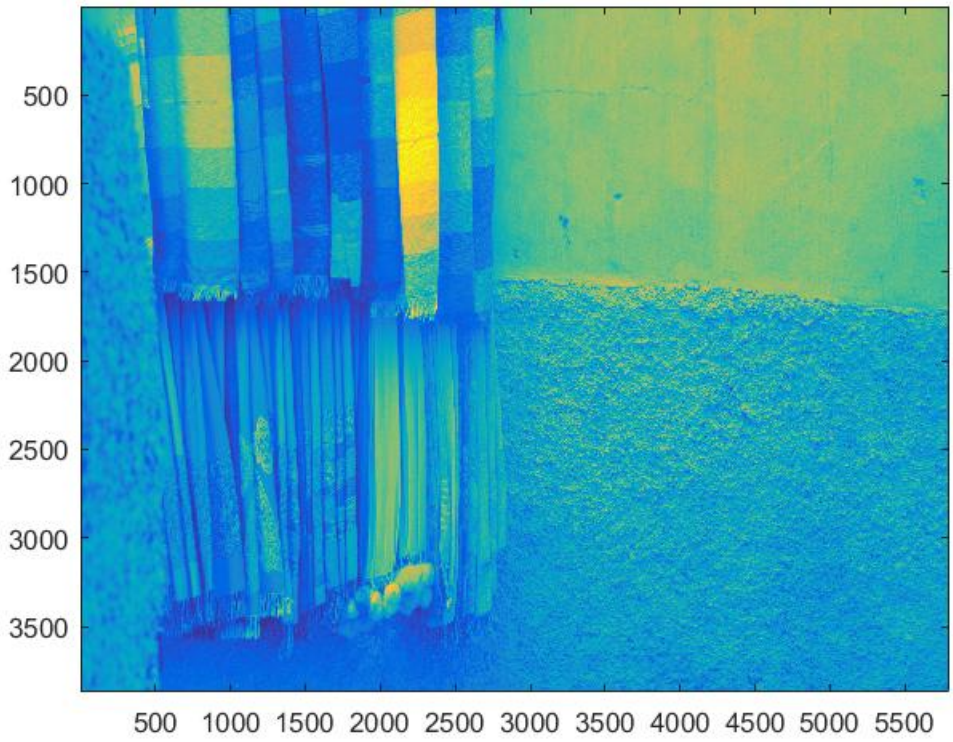
displays

```
close all

figure(2)
imshow(i16im);
figure(3)
imshow(i16im,[])
figure(4)
imagesc(double(i16im)/double(max(i16im(:))))
figure(5)
imagesc(double(i16im)/double(max(i16im(:))))
colormap gray
axis image
axis off
axis tight

[sx,sy] = size(gim);
disp([imfjpg.Width,imfjpg.Height,sx,sy])
```

```
        5796        3870        3870        5796
```


500
1000
1500
2000
2500
3000
3500
500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500

Crop, : and end

```
cropim = gim(:,1000:end);
size(cropim)
figure(6)
imshow(cropim)
```

```
ans =

        3870        4797
```

Logical images and operations

```
smallim = gim(1:4:end,1:4:end);
darkim = smallim>128;
truim = smallim;
truim(darkim) = 128;
figure(7)
imshowpair(smallim,truim,'montage')
figure(8)
imshowpair(smallim,truim)
```

Published with MATLAB® R2015b