Lecture 6: Image Processing II

Most popular Digital image types:

- TIFF - Tagged Image File Format
- Bmp - Bitmap
- PNG - Portable Network Graphics
- GIF - Graphics Interchange Format
- JPEG (or JPG) - Joint Photographic Experts Group

Applications: Image Processing

- Medical imaging
- Robotics
- Automotive safety
- Consumer electronics
- Geospatial computing
- Machine vision

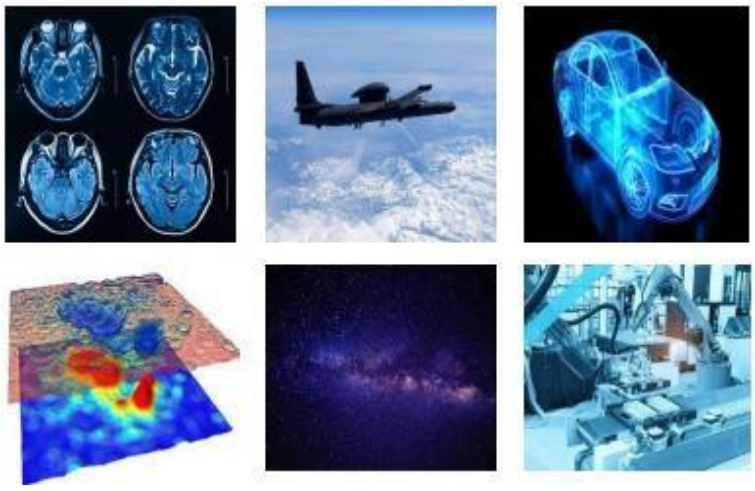


Image processing workflow:

Common Image Processing Challenges

- Reading and writing to various file formats
- Create and test algorithms with what-if scenarios
- Identifying causes of algorithm failure
- Visualizing images and average results
- Processing large images with limited memory
- Executing algorithms faster

Example of Image conversion in MATLAB :

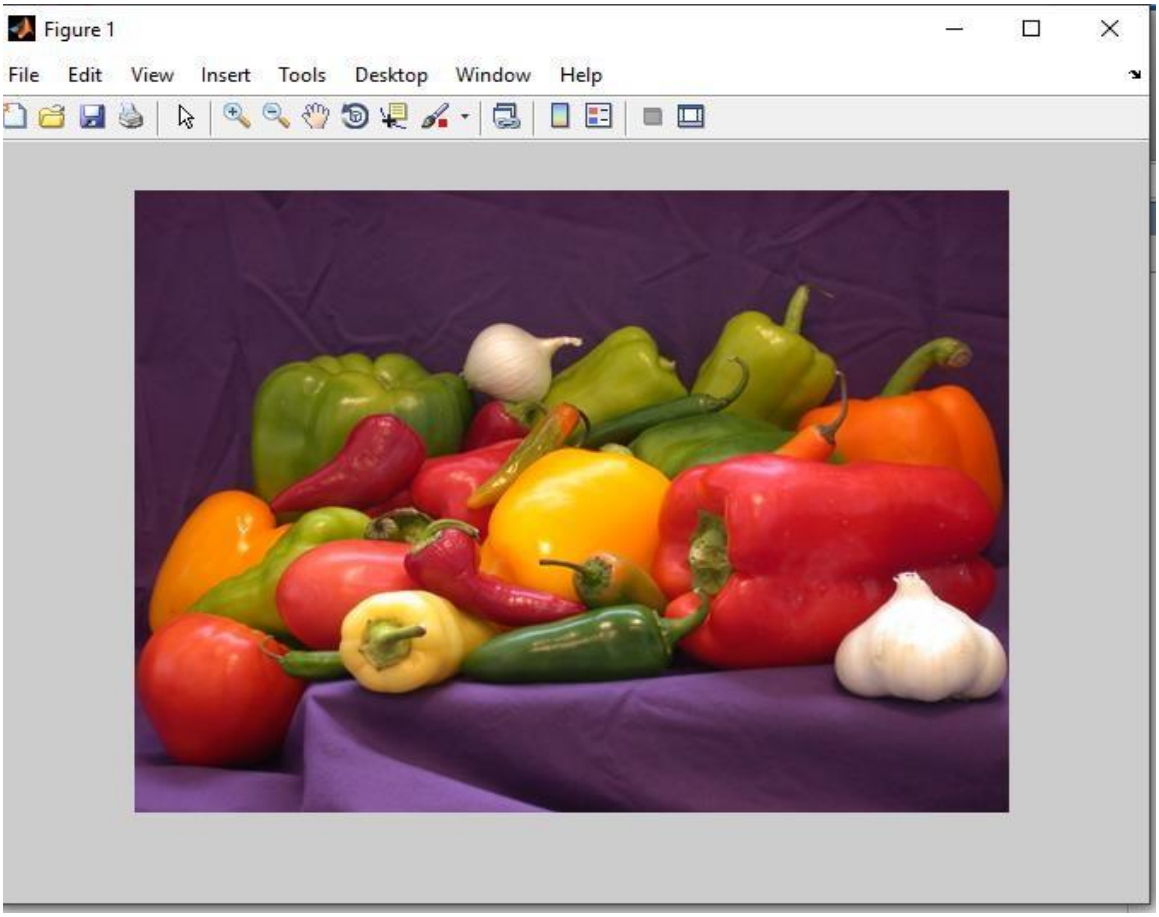
We have this image in MATLAB files:

To read this image use :

```
img = imread('peppers.png');
```

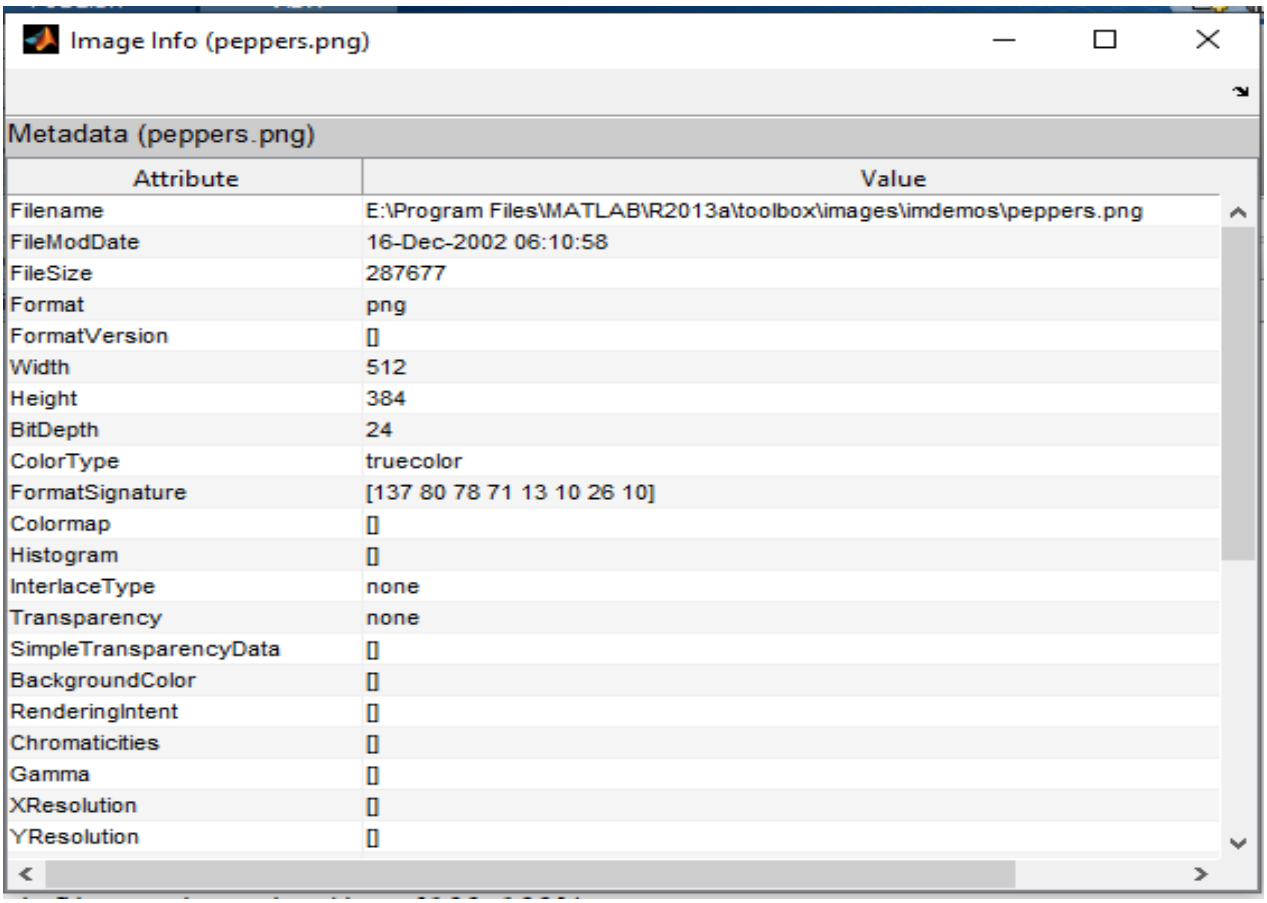
To show the image in a new figure use:

```
figure;
imshow(img);
```



To get image information like (name, size ,format ,Width, Height,…..etc) use:

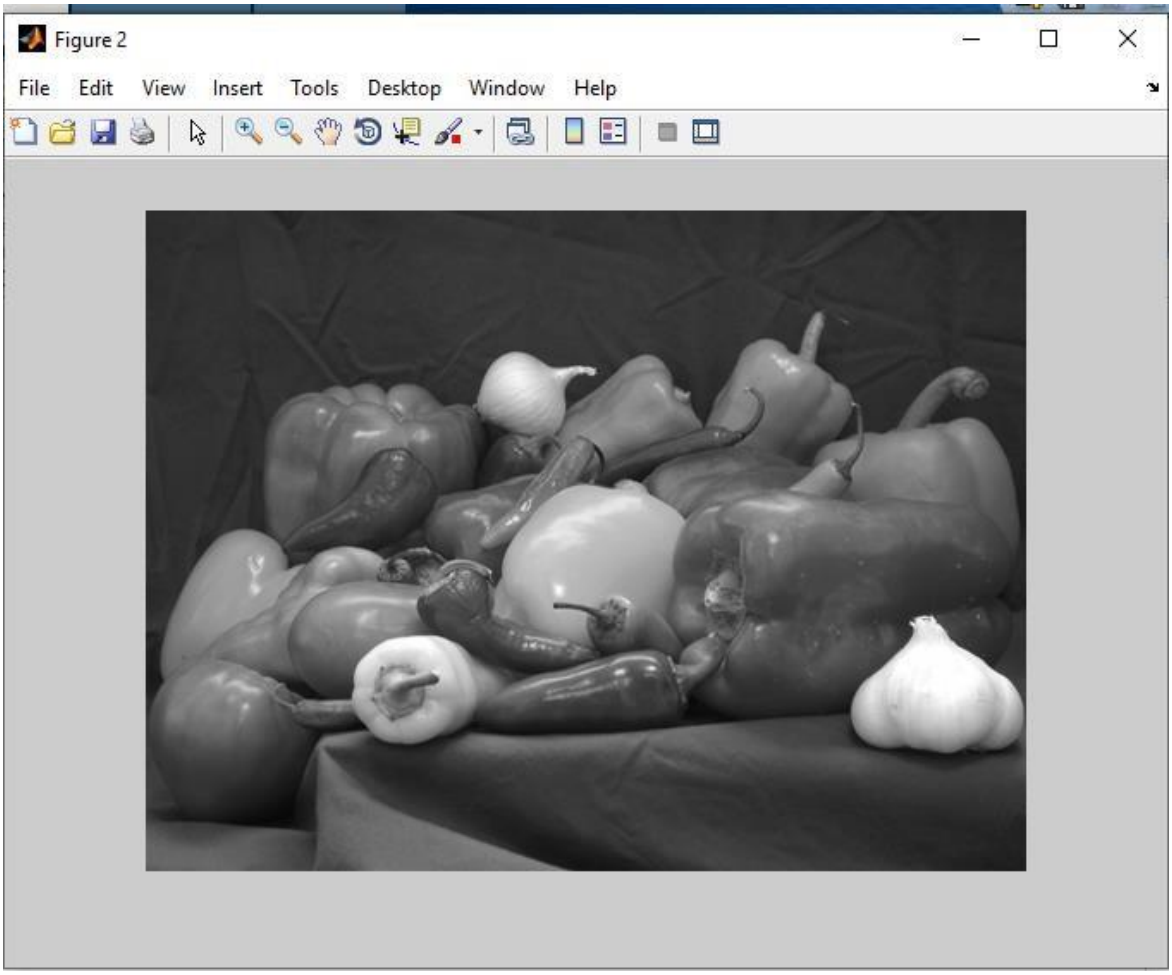
```
imageinfo('peppers.png')
```



Attribute	Value
Filename	E:\Program Files\MATLAB\R2013a\toolbox\images\imdemos\peppers.png
FileModDate	16-Dec-2002 06:10:58
FileSize	287677
Format	png
FormatVersion	[]
Width	512
Height	384
BitDepth	24
ColorType	truecolor
FormatSignature	[137 80 78 71 13 10 26 10]
Colormap	[]
Histogram	[]
InterlaceType	none
Transparency	none
SimpleTransparencyData	[]
BackgroundColor	[]
RenderingIntent	[]
Chromaticities	[]
Gamma	[]
XResolution	[]
YResolution	[]

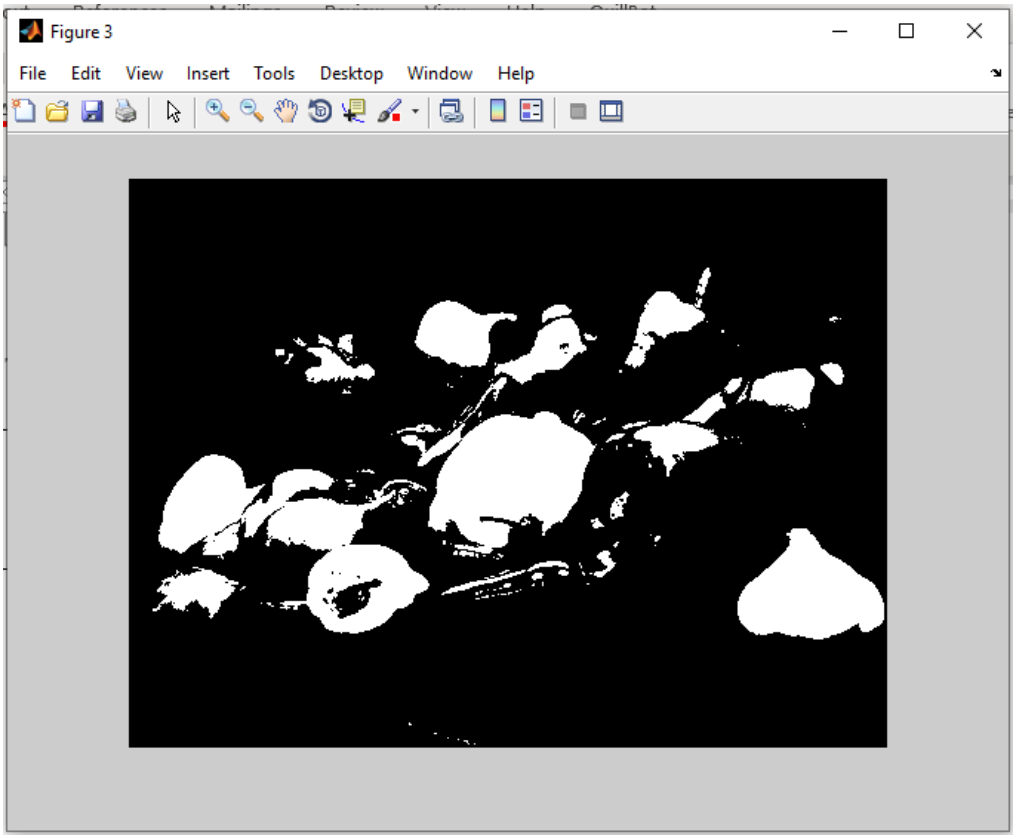
To convert this RGB image to Grayscale image use :

```
imgGray=rgb2gray(img);
figure,
imshow(imgGray);
```



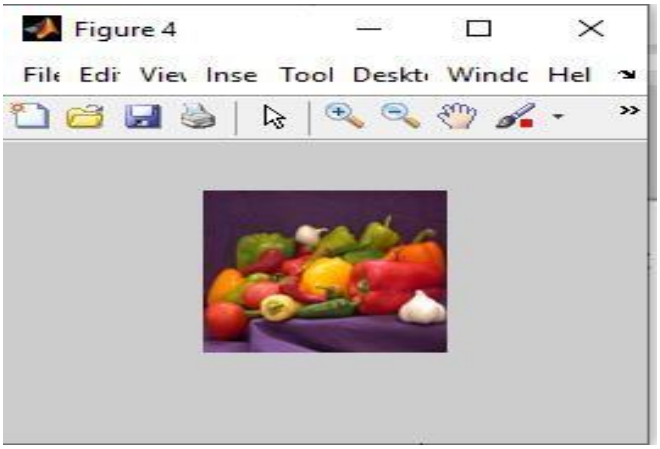
To convert image from RGB to Black and white (BW) or(binary image) use :

```
imgbw = im2bw(imgGray);
figure,
imshow(imgbw);
```



To resize the image and change the width and height of it use :

```
imSize = imresize(img,[100
100]);
figure,
imshow(imSize);
```



Full code:

```
%image read:
img = imread('peppers.png');
%show image in figure:
figure,
imshow(img);
%convert rgb image to gray scale image:
imgGray=rgb2gray(img);
figure,
imshow(imgGray);
%convert grayScale image to binary image:
imgbW = im2bw(imgGray);
figure,
imshow(imgbW);
%Resize rgb image:
imSize = imresize(img,[100 100]);
figure,
imshow(imSize);
```