

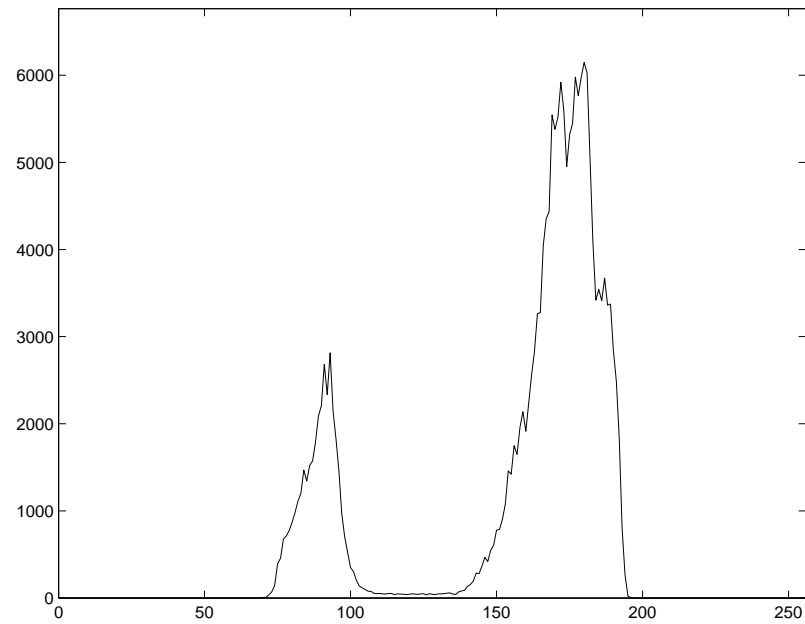
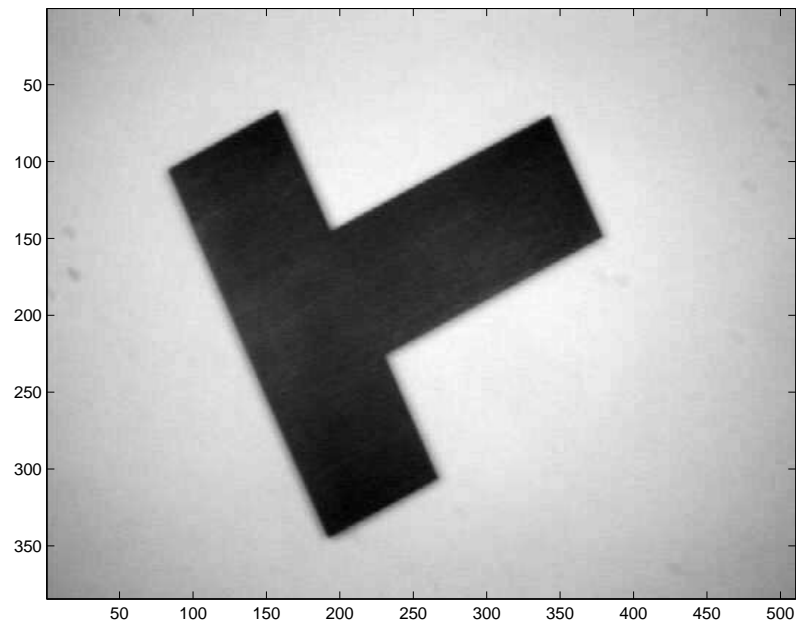
Image processing in Matlab: Distribution of pixel values

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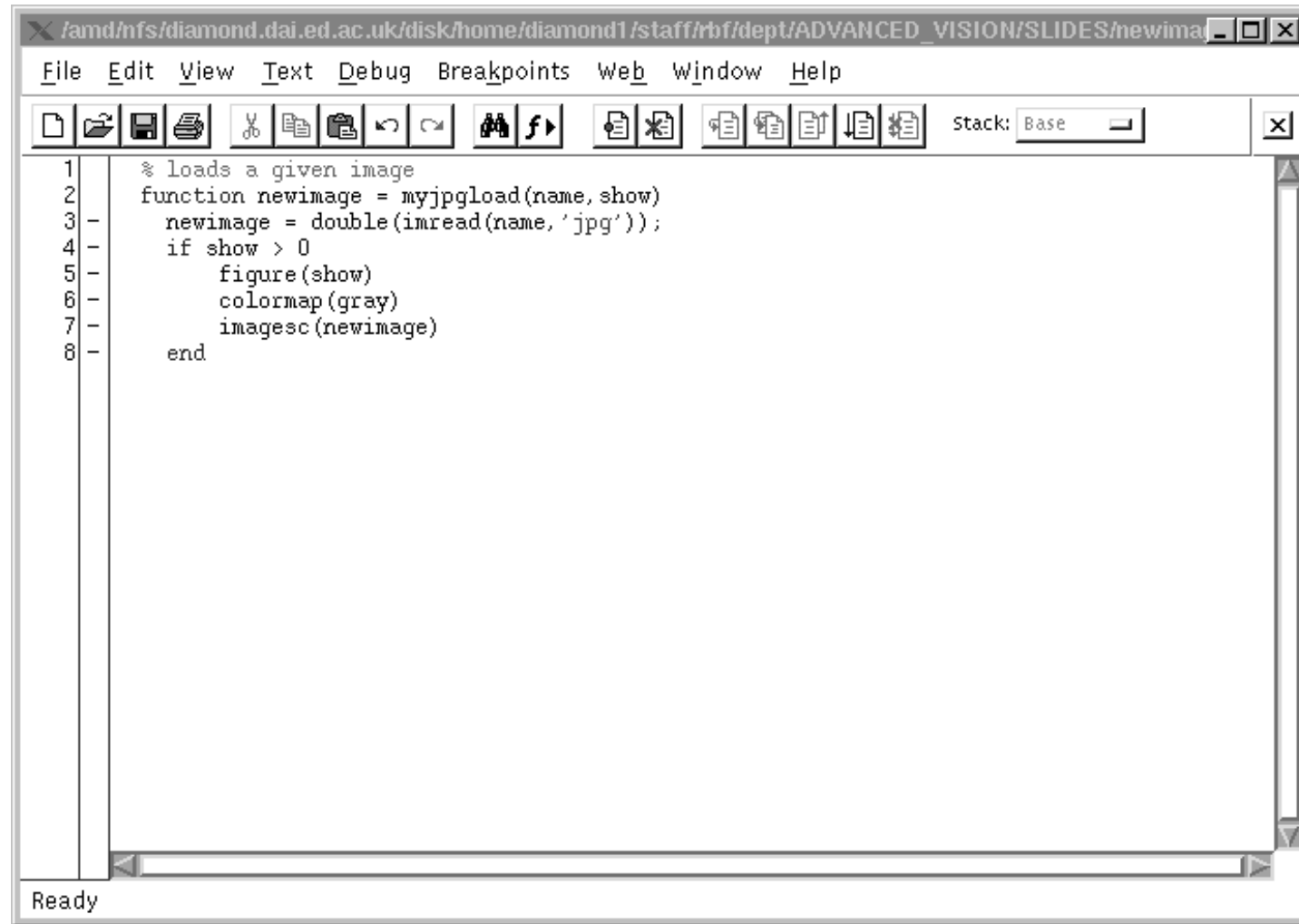
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Image and Result



Matlab for image read and display



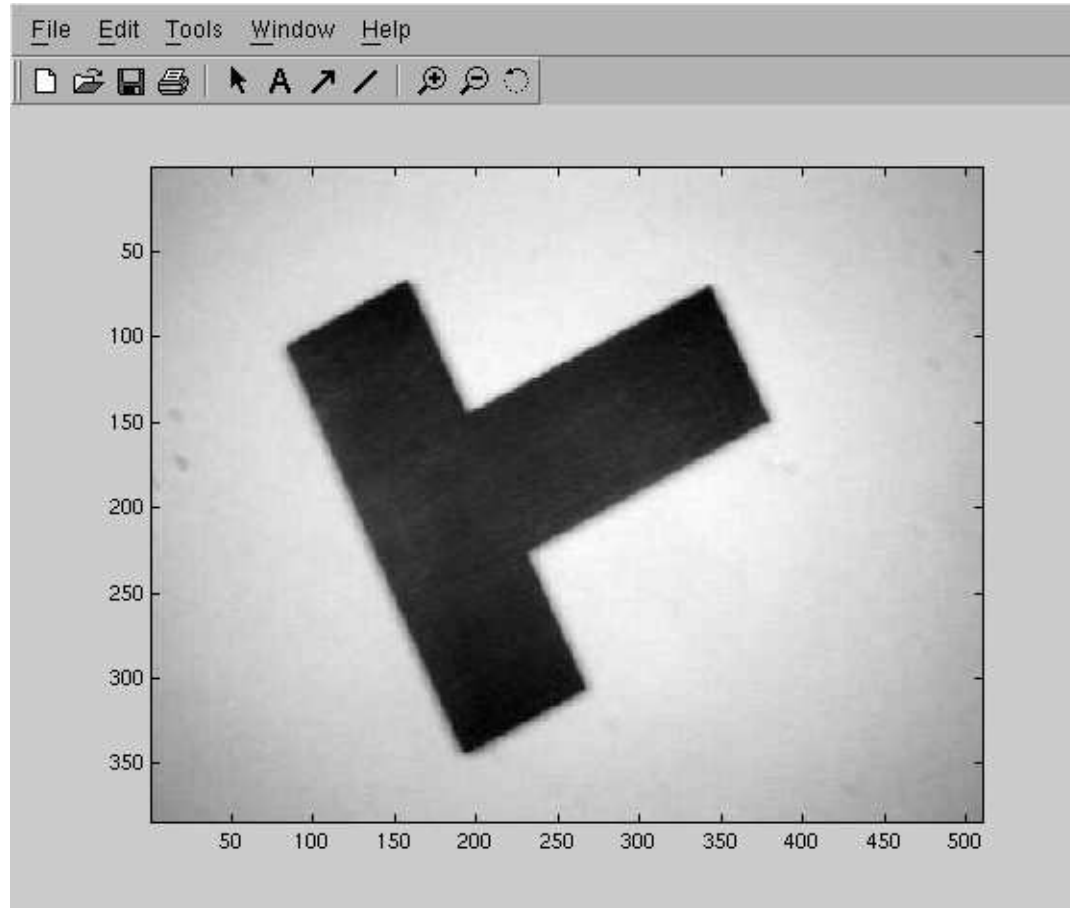
The screenshot shows a MATLAB editor window with the following code:

```
1 % loads a given image
2 function newimage = myjpgload(name, show)
3     newimage = double(imread(name, 'jpg'));
4     if show > 0
5         figure(show)
6         colormap(gray)
7         imagesc(newimage)
8     end
```

The window title is `/amd/nfs/diamond.dai.ed.ac.uk/disk/home/diamond1/staff/rbf/dept/ADVANCED_VISION/SLIDES/newima`. The menu bar includes `File`, `Edit`, `View`, `Text`, `Debug`, `Breakpoints`, `Web`, `Window`, and `Help`. The toolbar contains various icons for file operations and execution. The status bar at the bottom left shows `Ready`.

Can also use emacs on *.m files in another window.

Results figure output



Use File— >Export to save *.eps files for printing and documents

Matlab in command window

```
bigF = myjpgload('partbigF',3);  
[H,W] = size(bigF)
```

```
H =  
    384
```

```
W =  
    510
```

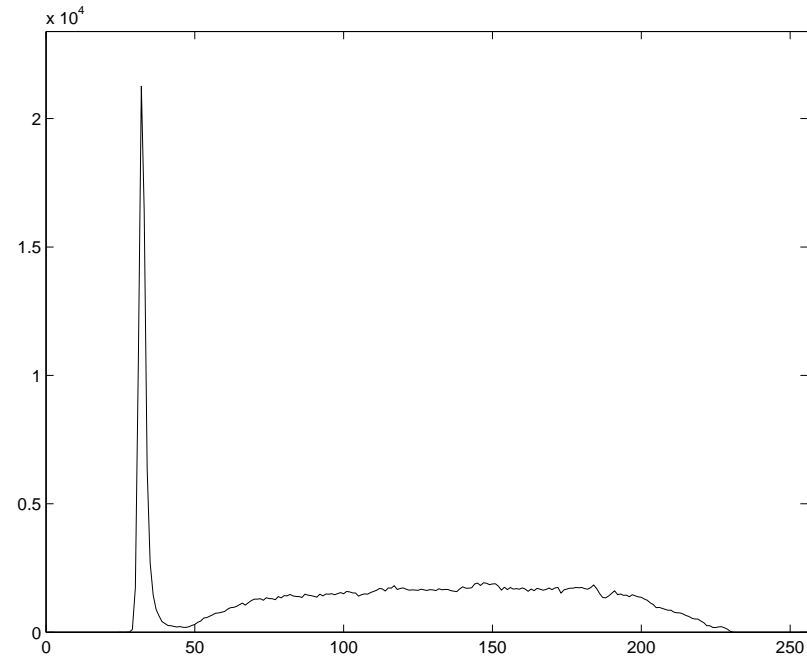
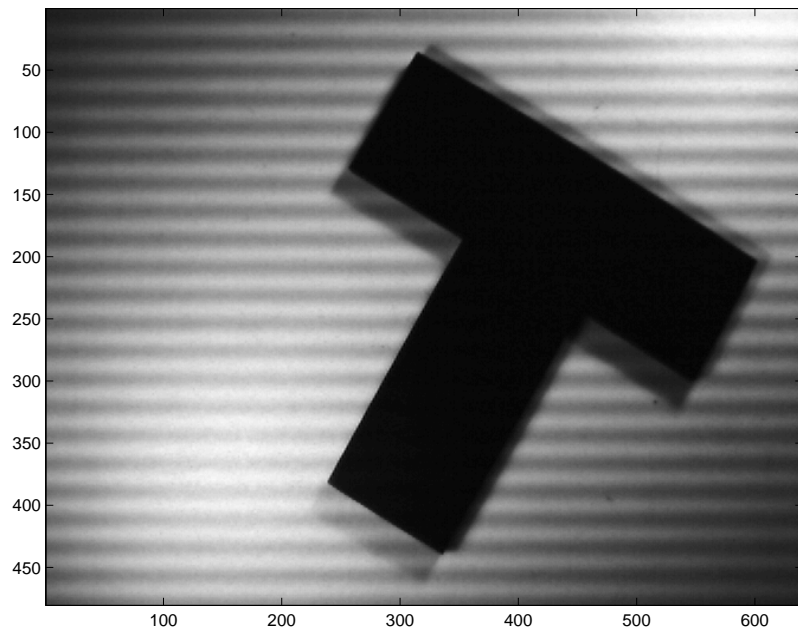
```
figure(3)           % what the '3' above does  
colormap(gray)     % "  
imagesc(bigF)      % "
```

bigF histogram

```
thehist = zeros(256,1);
[H,W] = size(bigF);
for r = 1 : H
    for c = 1 : W
        value = round(bigF(r,c));
        if value < 0           % array goes 1:256
            value = 0;        % but image goes 0:255
        elseif value > 255
            value = 255;
        end
        thehist(value+1) = thehist(value+1) + 1;
    end
end
```

```
figure(4)
plot(thehist)
axis([0, 255, 0, 1.1*max(thehist)])
```

Histogram Output



Why not 2 big peaks?

histc histogram builtin

```
% set up bin edges for histogram
edges = zeros(256,1);
for i = 1 : 256
    edges(i) = i-1;
end
[R,C] = size(bigF);
imagevec = reshape(bigF,1,R*C); % make long array
thehist = histc(imagevec,edges)'; % do histog.

figure(1)
plot(thehist)
axis([0, 255, 0, 1.1*max(thehist)])
```

Lecture Overview

- Some simple Matlab for image loading and figures
- Histograms of image values
- Why histograms can be messy