Lecture 4: Point Processing Operations

Part 3: Contrast Stretching

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Notes:

- Sample images are available in the images folder of the current directory. (You may need to add images folder into your path.)
- Related lecture: Lecture4 - Point Processing
- pdf versions of the .mlx files are also available for those using GNU Octave

```
% clear workspace variables and close windows
clc, clearvars, close all;
```

```
I = imread('images/lena.jpg'); % read a low contrast image file
if(size(I,3) == 3) % convert to grayscale if not
    I = rgb2gray(I);
end

% check the initial dynamic range of the image (min and max values)
min(I(:))
```

```
ans = uint8

0
```

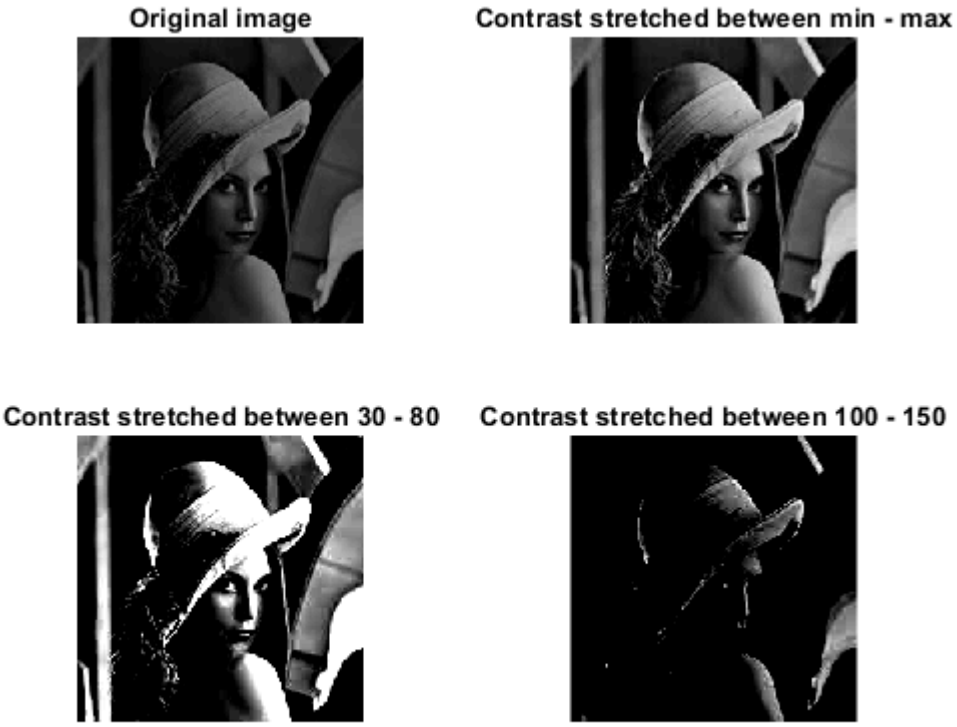
```
max(I(:))
```

```
ans = uint8

161
```

Option 1: adjust contrast while displaying

```
figure, subplot(2,2,1), imshow(I), title('Original image');
subplot(2,2,2), imshow(I, []), title('Contrast stretched between min - max');
subplot(2,2,3), imshow(I, [30 80]), title('Contrast stretched between 30 - 80');
subplot(2,2,4), imshow(I, [100 150]), title('Contrast stretched between 100 - 150');
```



Option 2: using imadjust function

```
minlevel = double(min(I(:)))/255
```

```
minlevel = 0
```

```
maxlevel = double(max(I(:)))/255
```

```
maxlevel = 0.6314
```

```
I7 = imadjust(I,[minlevel maxlevel],[]);
min(I7(:))
```

```
ans = uint8

0
```

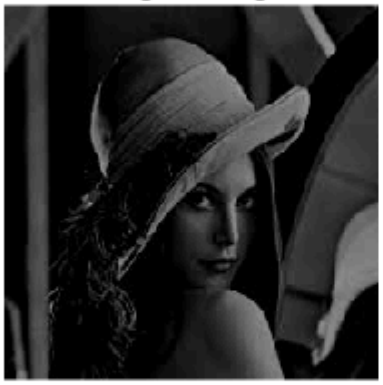
```
max(I7(:))
```

```
ans = uint8

255
```

```
figure, subplot(1,2,1), imshow(I), title('Original image');
subplot(1,2,2), imshow(I7), title('Contrast stretched');
```

Original image



Contrast stretched