```
%{
Yonatan Carver
ECES 352 - Lab 6

%}
clear; clc; close all

load stinger % as var: xx
size_xx = size(xx);
downsample_factor = 4;
downsampled_image = xx(1:downsample_factor:end,
 1:downsample_factor:end); % downsample the image
size_ds_image = size(downsampled_image); % size of downsampled image

figno = 1; % counter for figure number - no two images can have the
 same figure number
show_img(xx, figno, 0); trusize
title('Original Image')
figno = figno + 1;

show_img(downsampled_image, figno, 0); trusize
title(['Downsampled Image (downsampled by: ',
 num2str(downsample_factor), ')'])
figno = figno + 1;
```

```
Values > 255 set to 255 and  negative values set to 0
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```
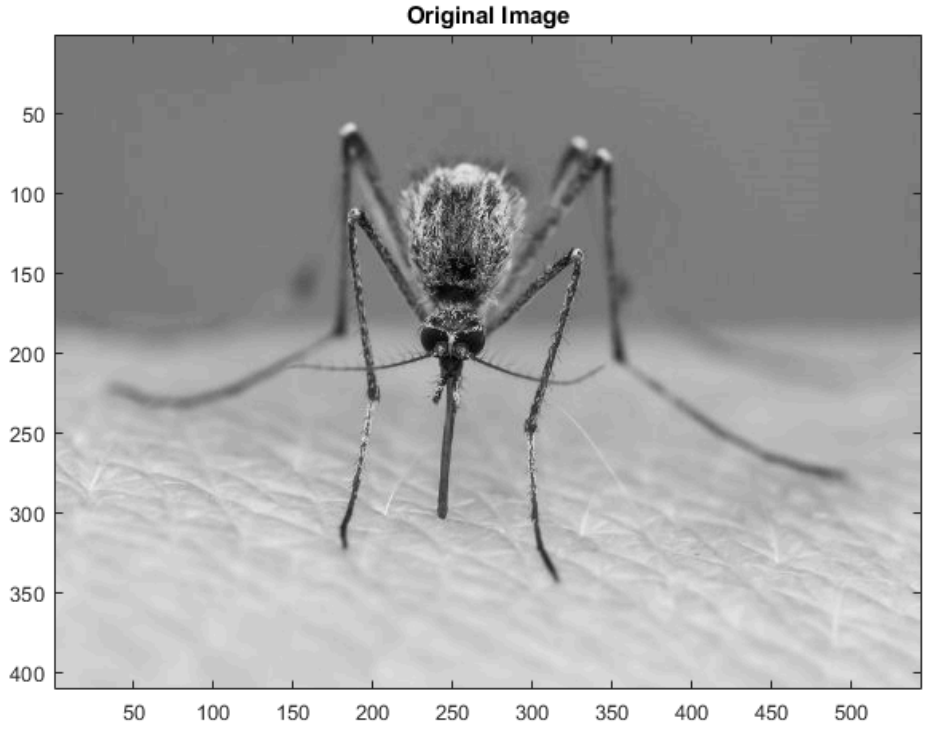
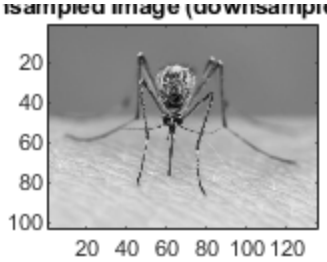
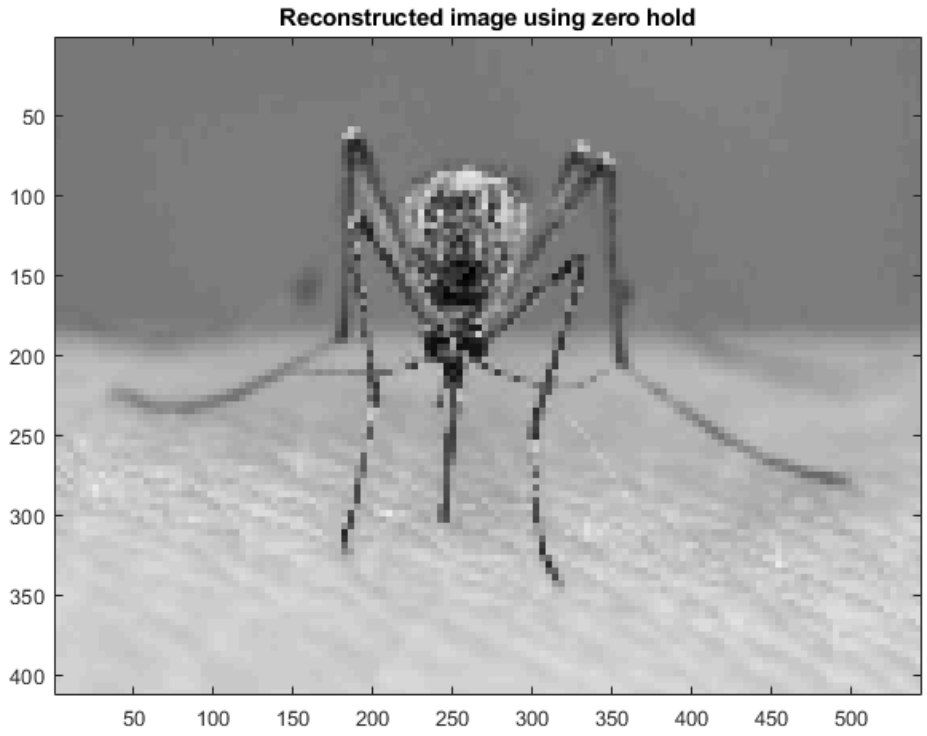





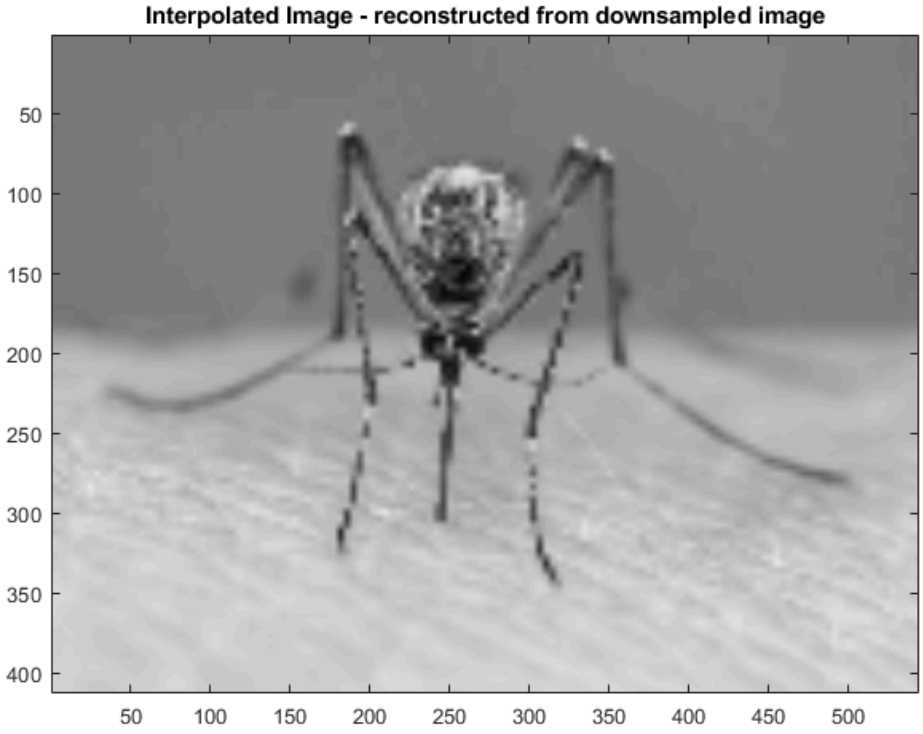

```
dsf_ones = ones(downsample_factor, downsample_factor); %
 [downsample_factor by downsample_factor] grid of ones
x = {}; % empty cell array to hold [downsample_factor by
 downsample_factor] matrices

for row = 1:size(downsampled_image,1)
  for col = 1:size(downsampled_image,2)
   x = [x double(downsampled_image(row, col)) * dsf_ones];
 end
end

% x contains a matrix of cells, each with size [downsample_factor x
 downsample_factor]

% reconstructed matrix puts takes all cells from "x" and creates the
% correct size image

reconstructed = [];

for i = [1:length(downsampled_image):length(x)]
 reconstructed = [reconstructed ; cell2mat(x(i:(i
+length(downsampled_image)-1)))];
end

show_img(reconstructed, figno, 0); trusize
title('Reconstructed image using zero hold')
figno = figno + 1;
```

Values > 255 set to 255 and negative values set to 0




```
% interpolate over the rows
q = zeros(size_ds_image(1),size_ds_image(2)*downsample_factor);
for i = 1:1:size_ds_image(1)
 q(i,:) = interp1([1:1:size_ds_image(2)],
 double(downsampled_image(i,:)),
 linspace(1,size_ds_image(2),size_ds_image(2)*downsample_factor));
end

% interpolate over the columns
w = zeros(size_ds_image(1)*downsample_factor,
 size_ds_image(2)*downsample_factor);
for j = 1:1:size_ds_image(2)*downsample_factor
 w(:,j) = interp1([1:1:size_ds_image(1)], double(q(:,j)),
 linspace(1,size_ds_image(1),size_ds_image(1)*downsample_factor));
end

show_img(w, figno, 0); trusize
title('Interpolated Image - reconstructed from downsampled image')
```

Values > 255 set to 255 and negative values set to 0



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