

```

% Function to quantize the image to n levels using resizing
function quantized_image = quantize_with_resize(image, num_levels)
    % Determine the factor to quantize the image
    scale_factor = sqrt(256 / num_levels);

    % Resize the image down to a small size (based on the scale factor)
    small_image = imresize(image, 1/scale_factor, 'bilinear');

    % Resize the small image back to the original size
    quantized_image = imresize(small_image, size(image), 'nearest');
end

% Load the image and convert it to grayscale
image = imread('https://upload.wikimedia.org/
wikipedia/commons/thumb/1/10/Supermoon_Nov-14-2016-minneapolis.jpg/1200px-
Supermoon_Nov-14-2016-minneapolis.jpg');
gray_image = rgb2gray(image);

% Quantize the image to 32 grayscale levels
quantized_image = quantize_with_resize(gray_image, 32);

% Display the original and quantized images
figure;

subplot(1, 2, 1);
imshow(gray_image);
title('Original Grayscale Image');

subplot(1, 2, 2);
imshow(quantized_image);
title('Quantized to 32 Levels');

```

Original Grayscale Image



Quantized to 32 Levels

