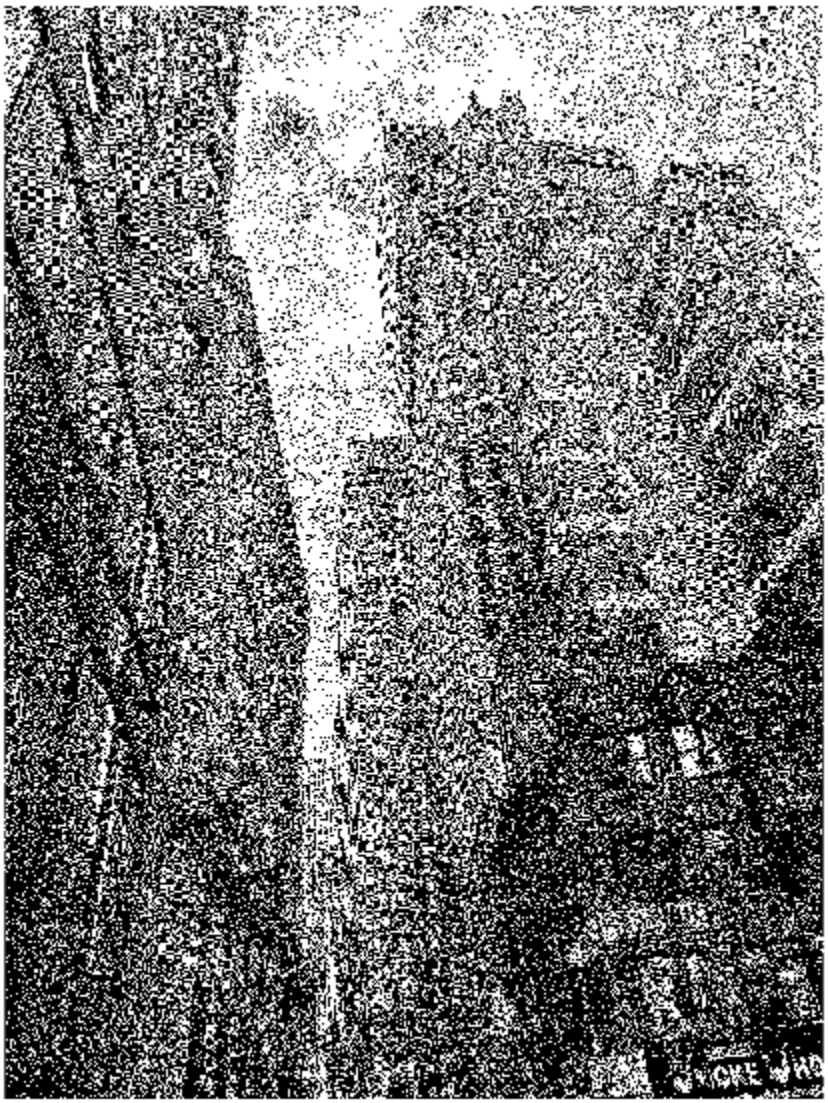
```
clc;
% Loading and Reading an Image
img = imread('new_york.jpeg');
my_img = rgb2gray(img);  % Convert to grayscale
imshow(my_img);
title('My Original Image');

% Applying Floyd-Steinberg Dithering
floyd_dithered = fs(my_img, 2);
figure;
imshow(floyd_dithered);
title('Floyd-Steinberg Dithered Image');

% Applying Jarvis-Judice-Ninke Dithering
jarvis_dithered = jjn(my_img);
figure;
imshow(jarvis_dithered);
title('Jarvis-Judice-Ninke Dithered Image');

%Both functions were inspired by the function in book!

% Function for Floyd-Steinberg Dithering (fs)
function y = fs(x, k)
    height = size(x,1);
    width = size(x,2);
    ed = [0 0 0 7 0; 3 5 1 0 0; 0 0 0 0 0]/16;
    y = uint8(zeros(height,width));
    z = zeros(height+4,width+4);
    z(3:height+2,3:width+2) = x;
    for i = 3:height+2
        for j = 3:width+2
            quant = floor(255/(k-1))*floor(z(i,j)*k/256);
            y(i-2,j-2) = quant;
            e = z(i,j) - quant;
            z(i:i+2,j-2:j+2) = z(i:i+2,j-2:j+2) + e * ed;
        end
    end
end

% Function for Jarvis-Judice-Ninke Dithering (jjn)
function out = jjn(im)
    height = size(im,1);
    width = size(im,2);
    out = zeros(size(im));
    ed = [0 0 0 7 5; 3 5 7 5 3; 1 3 5 3 1]/48;
    z = zeros(size(im)+4);
    z(3:height+2,3:width+2) = double(im);
    for i = 3:height+2
        for j = 3:width+2
            quant = 255*(z(i,j)>=128);
            out(i-2,j-2) = quant;
            e = z(i,j) - quant;
```

```
            z(i:i+2,j-2:j+2) = z(i:i+2,j-2:j+2) + e*ed;
        end
    end
    out = im2uint8(out);
end


% Floyd-Steinberg Dithering:
% The resulting image has more clearer patterns, and transitions between
shades
% appears more pronounced or grainy. In high-contrast areas, the dithering
is also more distinct.
% Jarvis-Judice-Ninke Dithering:
% The image is smoother, and especially in gradient areas. There are fewer
% noticeable dots or patterns, creating a more visually continuous result.
```

My Original Image

Floyd-Steinberg Dithered Image



Published with MATLAB® R2023b