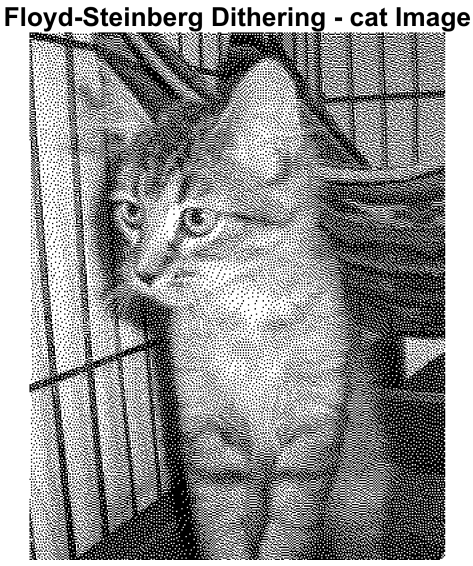
```
% Load the image and convert to grayscale
image = im2gray(imread("C:\Users\Pavan\Desktop\cat.2.jpg"));

% Apply Floyd-Steinberg Dithering
floyd_dithered = dither(image);
figure; imshow(floyd_dithered); title('Floyd-Steinberg Dithering - cat Image');
```




```
% Apply Jarvis-Judice-Ninke Dithering
jjn_dithered = double(image);
jjn_filter = [0 0 0; 0 0 3; 1 2 1] / 16;

for i = 1:size(jjn_dithered, 1) - 2
    for j = 2:size(jjn_dithered, 2) - 1
        old_pixel = jjn_dithered(i, j);
        new_pixel = round(old_pixel / 64) * 64;
        jjn_dithered(i, j) = new_pixel;
        error = old_pixel - new_pixel;
        jjn_dithered(i:i+2, j-1:j+1) = jjn_dithered(i:i+2, j-1:j+1) + error *
jjn_filter;
    end
end

figure; imshow(uint8(jjn_dithered)); title('Jarvis-Judice-Ninke Dithering - cat
Image');
```

Jarvis-Judice-Ninke Dithering - cat Image

Floyd-Steinberg Dithering Comparison:

Image Appearance: The image has a noisier, textured appearance and seems grainier.To imitate grayscale values, it adds a lot of tiny dots, which results in excellent resolution but noticeable noise.Areas with sharp edges, such those near trees or waterfalls, tend to be noisy.

Advantages: Perfect for finely detailed, tiny textures computationally effective.

Limitations: May give the impression of being boisterous Jarvis, Judge, and Nikke Hesitating:

Picture Look: Results are more noise-free and more smoothly produced improves its ability to handle gradients, such those seen in sky and water, by producing bigger, continuous patterns.The edges have less dispersed dots and seem more polished, akin to waterfalls.

Advantages: More expansive regions have better quality and smoother slopes Visual noise is lower than at Floyd-Steinberg.

Restrictions:more sophisticated in terms of calculation may result in a noticeable pattern or banding artifacts in certain locations.

In summary

Floyd-Steinberg entails more noise, but it performs better in photos with fine details.

Landscapes and other settings with gentle transitions are good candidates for JJN Dithering since it produces smoother visuals. It is an excellent option if you want to keep things looking softer, although Floyd-Steinberg is better for highly detailed designs that require some noise tradeoff.