

EECE 5612 Midterm Project  
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The approach taken to denoise this image is to consider the surrounding pixels for every pixel as multiple observation for the value of the center pixel. Since the original image is known to be either signal absent or present with  $A = 255$ , the average of the window for each pixel is compared to  $255 / 2$ . The window size was chosen to be  $29 \times 29$ , which was determined by comparing reconstructed images with different window sizes and picking the one that is most clear, which ultimately is a subjective decision since there is no way to validate the correctness.

```
Y = load('mdt22.mat').y;  
ret = zeros(1d000);  
window_radius = 14;  
  
for i = (window_radius + 1):(1000 - window_radius)  
    for j = (window_radius + 1):(1000 - window_radius)  
  
        x_range = (i - window_radius):(i + window_radius);  
        y_range = (j - window_radius):(j + window_radius);  
        window = Y(x_range, y_range);  
  
        if mean(window, 'all') > (255 / 2)  
            ret(i,j) = 255;  
        end  
    end  
end  
imshow(ret)
```

