**Hough Transformation – ρ –θ space operation**  
Algorithm outline  
1) Initialize accumulator H to all zeros  
3) For each edge point (x,y) in the image  
 For θ = 0 to 180  
 ρ = x cos θ + y sin θ  
 H(θ, ρ) = H(θ, ρ) + 1  
 end  
end  
3) Find the value(s) of (θ, ρ) where H(θ, ρ) is a local maximum  
4) The detected line in the image is given by  
ρ = x cos θ + y sin θ

**Hough Transformation – Overall procedure**  
(1) Apply an edge-detection operator to obtain an edge image (image with  
edge pixels valued 1 and non-edge pixels valued 0);  
(2) Compute the Hough transformation for all edge pixels (as stated in last  
two slides);  
(3) Scan the ρ - θ space to identify peaks and/or clusters of high value, and  
make a list of the (ρ , θ ) pairs for these peaks;  
(4) For each (ρ , θ ) pair, draw a line in the edge image, and align pixels along  
the line to determine the edge segment (starting and ending points) in  
the image.