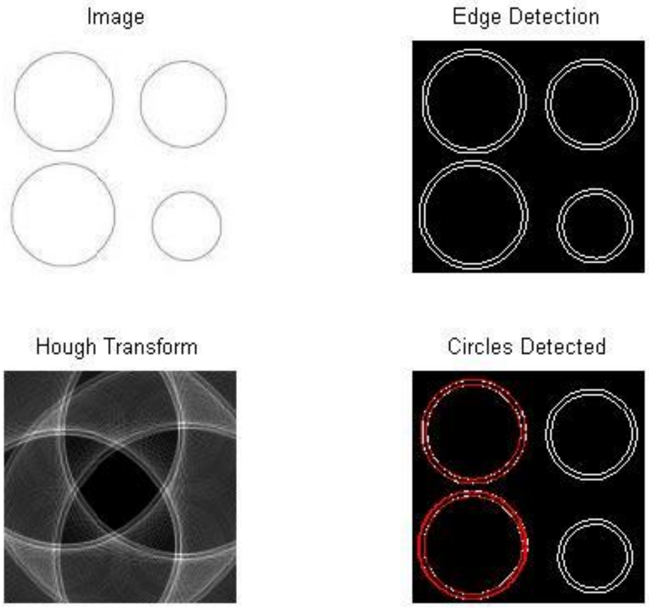
Hough Circles HoughCircle(IMAGE,F)

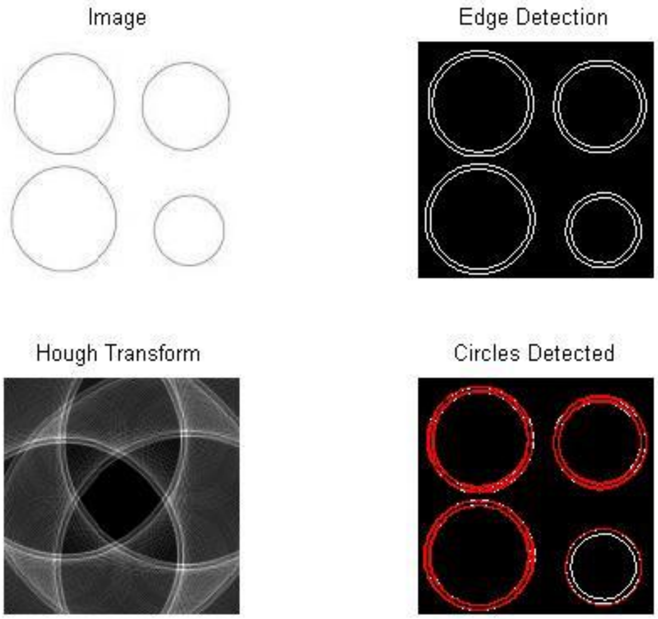
We made a function that can detect circles where the inputs of the function is the image and a value (F) between 0 and 1 used to calculate the threshold where the threshold = maximum vote*F.

The output of the function is the Edge detection of the image , the Hough transform, and the image with circles detected.

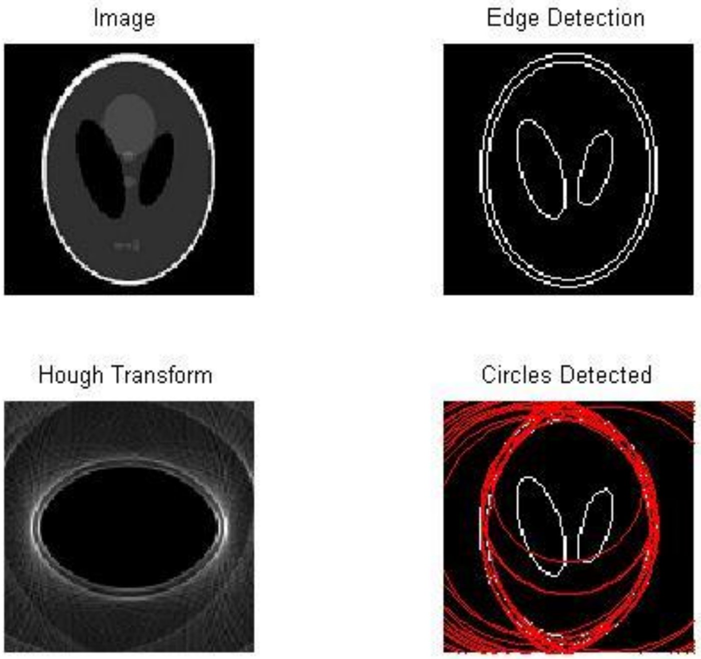
```
>> HoughCircle('Cir.jpg',0.8)
```



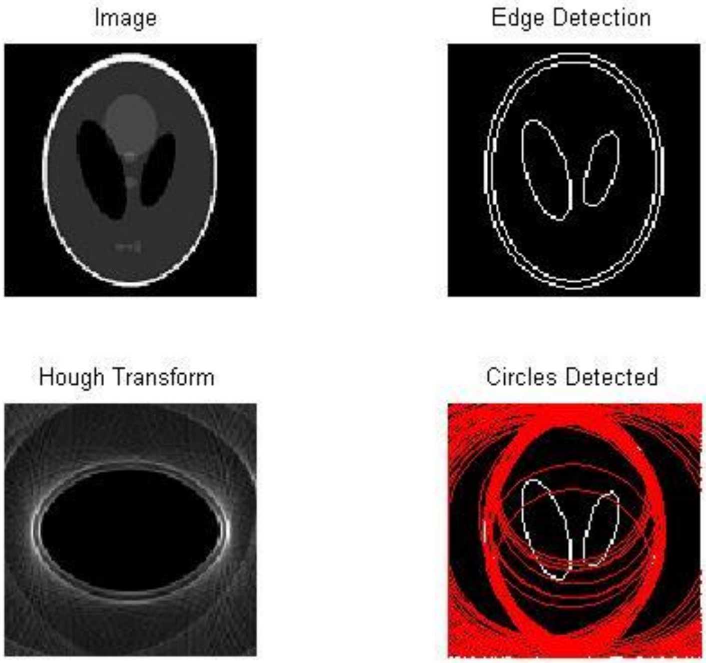
```
>> HoughCircle('Cir.jpg',0.6)
```



```
>> HoughCircle('CT.jpg',0.9)
```



```
>> HoughCircle('CT.jpg',0.8)
```

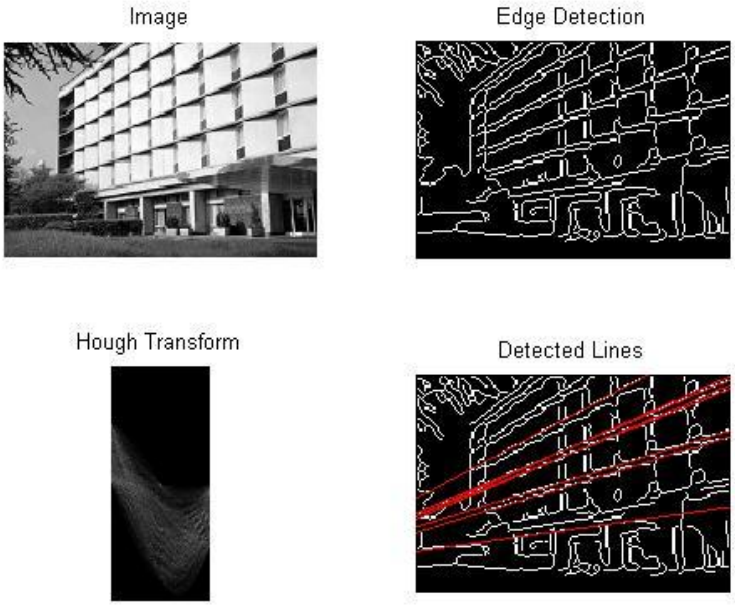


Hough Lines HoughLine(IMAGE,F)

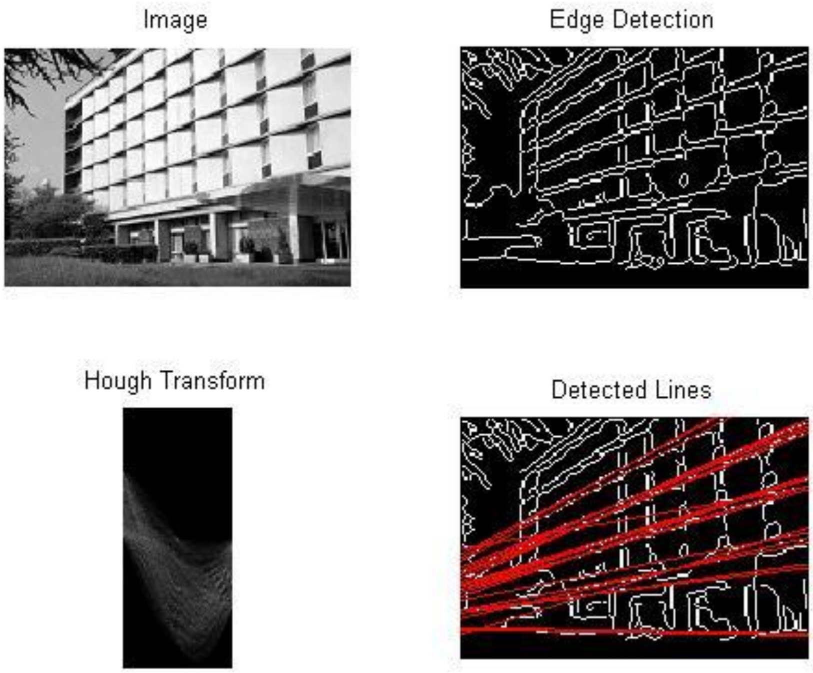
We made a function that can detect lines where the inputs of the function is the image and a value (F) between 0 and 1 used to calculate the threshold where the threshold = maximum vote*F.

The output of the function is the Edge detection of the image , the Hough transform, and the image with lines detected.

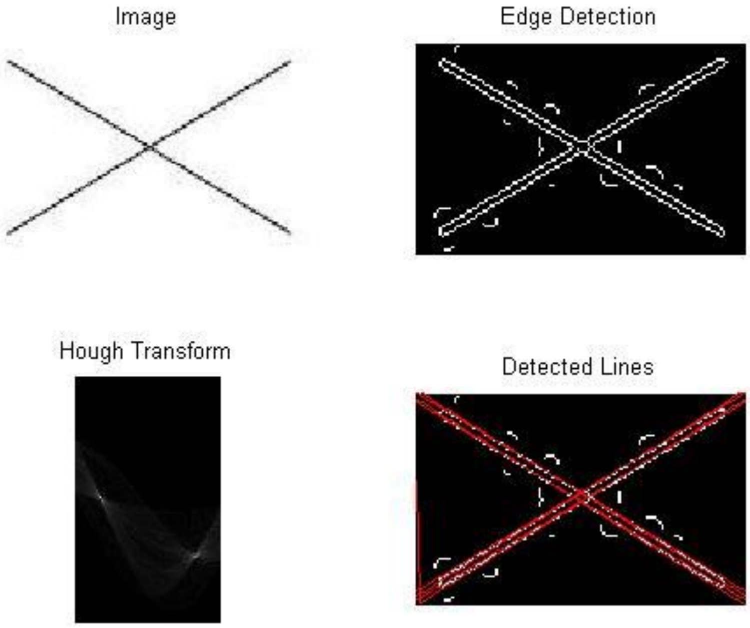
```
>> HoughLine('Lines.jpg',0.6)
```



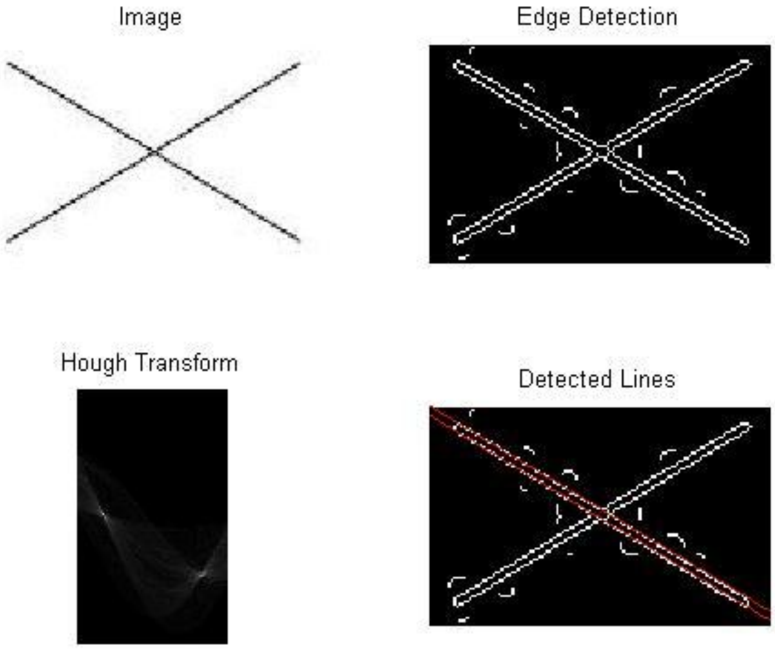
```
>> HoughLine('Lines.jpg',0.5)
```



```
>> HoughLine('L.jpg',0.6)
```



```
>> HoughLine('L.jpg',0.8)
```



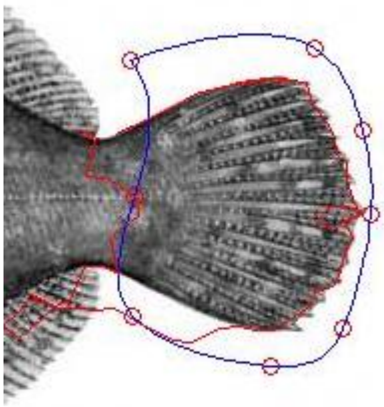
Counter initialization

We made a function called getsnake() to get the contour points

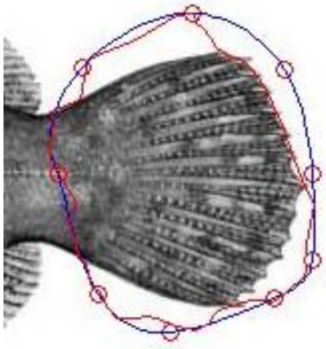
And evolve the Active Contour Model (snake) using the greedy algorithm function Snake(I,a,b,c)

Where I is image and a,b,c are the alpha beta and gamma

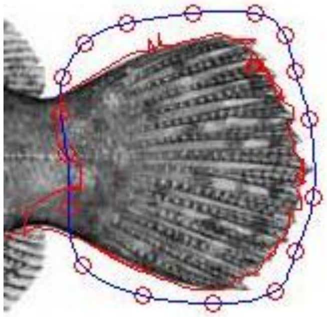
- The higher α, the more important the distance between points is minimized
- The higher β, the more important that angles are maximized
- The higher γ, the more important image edges are
- Choose different values dependent on Feature to extract
- Set α high if there is a deceptive Image Gradient
- Set β high if smooth edged Feature, low if sharp edges
- Set γ high if contrast between Background and Feature is low



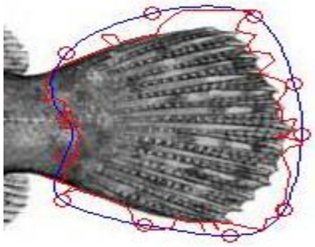
A= 1.3, β= 0.7, γ=0.5



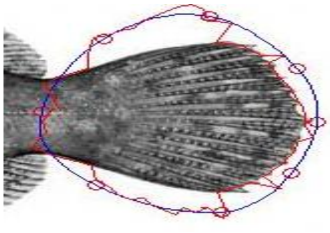
A= 1, β= 1, γ=1



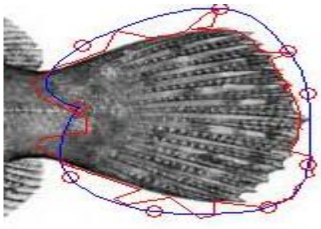
A= 1.3, β= 0.0005, γ=0.5



A= 1.2, β= 1, γ=1.2

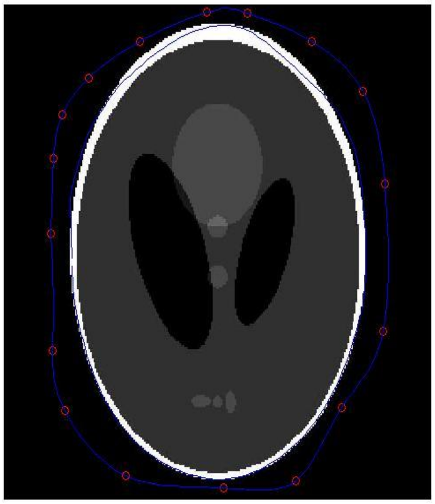


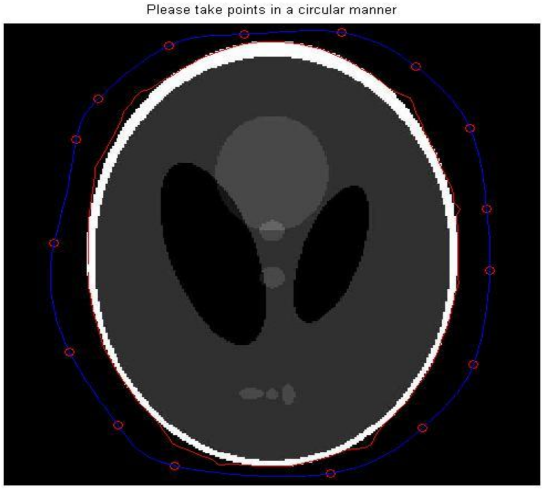
A= 0.035, β= 0.0005, γ=1



A= 0.05, β= 0.0005, γ=0.3

Conclusion : the best result is in very low beta because of high edges and low gamma for high contrast and high alpha





A= 1, β= 8, γ=0

A= 1, β= 1, γ=1

Beta high for high curvature and gamma high for image energy and alpha high for continuity