Detect and Measure Circular Objects in a image

```
md"""
# Detect and Measure Circular Objects in a image
"""
```

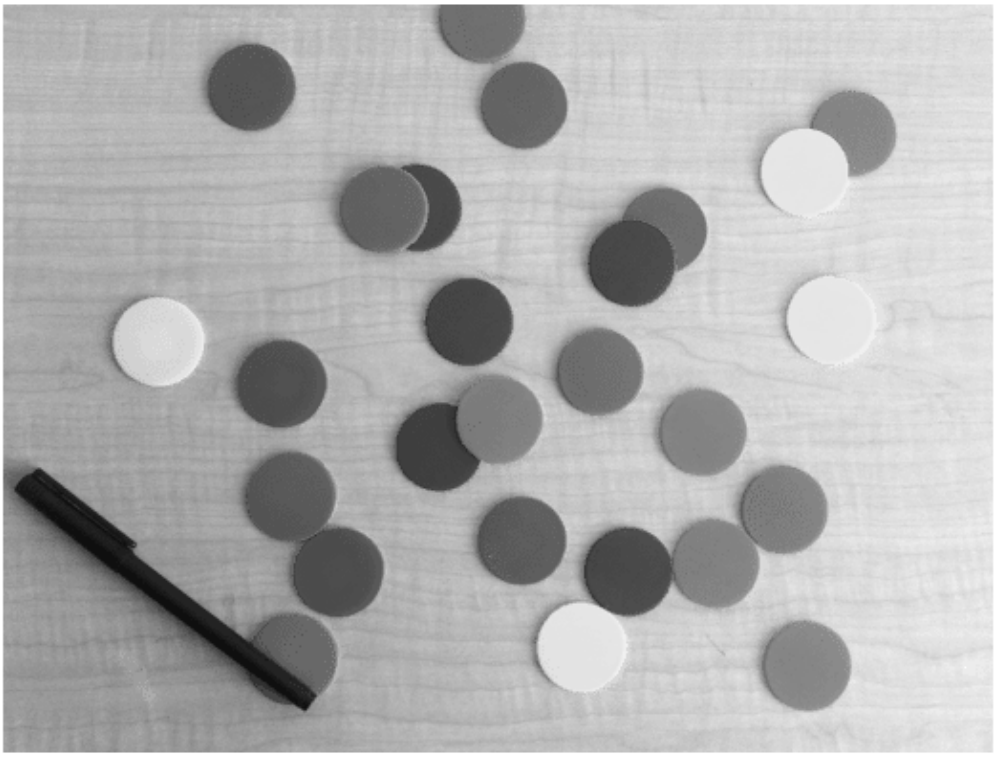
```
using FileIO,Images,ImageCore,ImageFeatures,ImageView,ImageDraw,ColorVectorSpace
```

```
using Plots,ImageContrastAdjustment
```

```
begin
img = load("assets/roundchips.png"); #second way

#mosaicview(img;nrow=1) ; end
end
```

```
img_gray =
```



```
img_gray=Gray.(img)
```

```
img_edges = canny(img_gray, (Percentile(95),Percentile(85)),15);
```

```
dx, dy=imgradients(img, KernelFactors.ando5);
```

```
img_phase = phase(dx, dy);
```

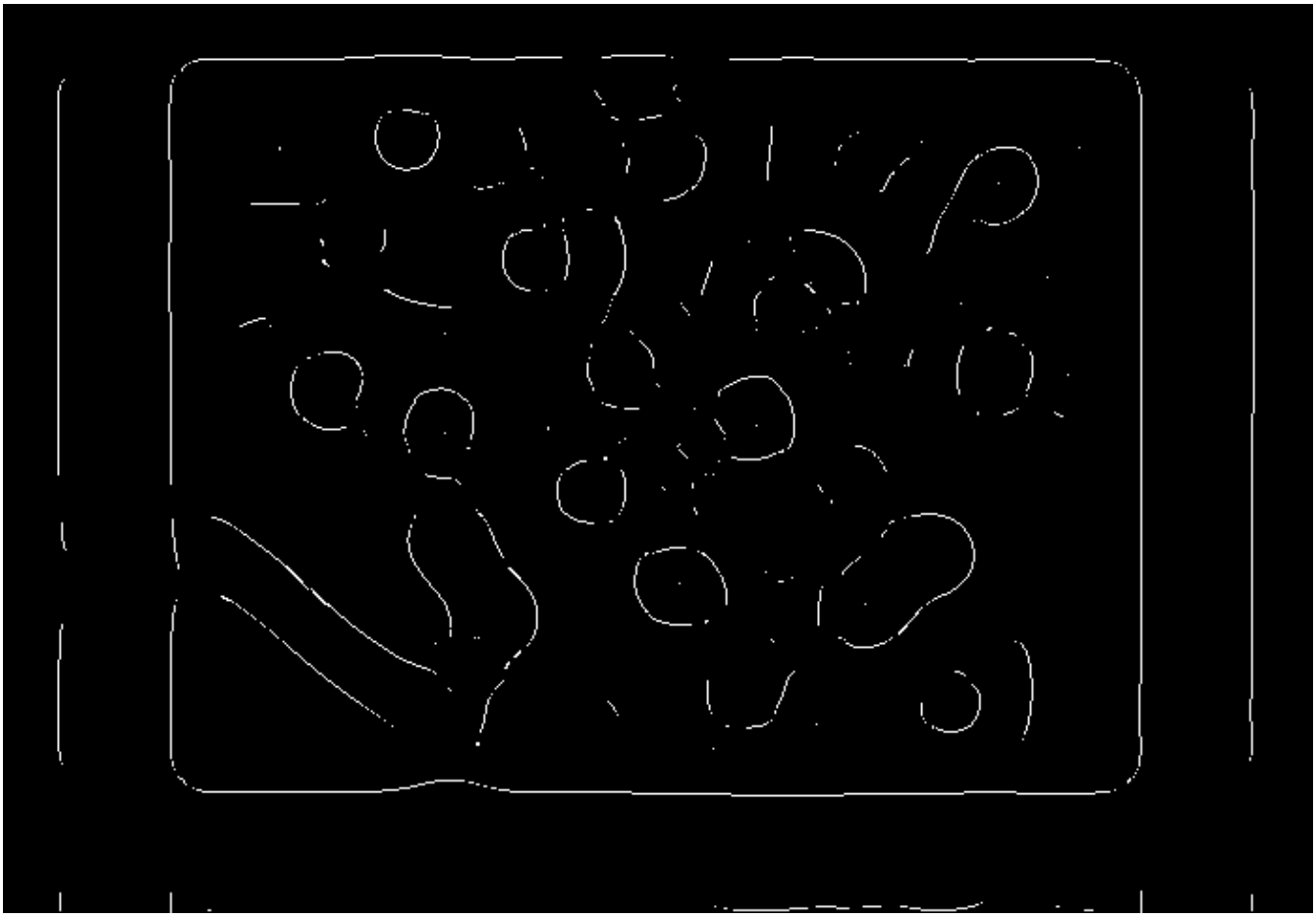
```
centers, radii = hough_circle_gradient(img_edges, img_phase, 20:30);
```

```
img_demo = Float64.(img_edges); for c in centers img_demo[c] = 2; end
```

```
484×698 Array{Float64,2}:
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  …  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  …  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 ⋮                        ⋮              ⋱  ⋮                        ⋮
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  …  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
 0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
```

```
img_demo
```

```
using Colors
```



```
Gray.(img_demo)
```

```
Int64[22, 23, 20, 20, 24, 28]
```

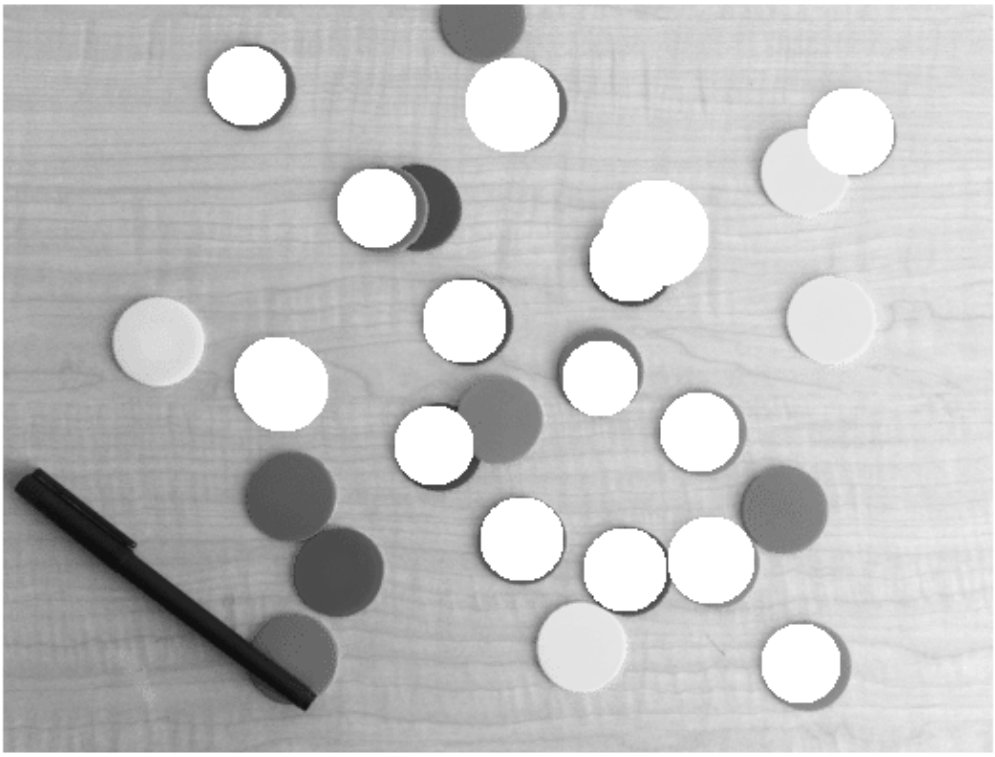
```
radii
```

```
CartesianIndex{2}[CartesianIndex(309, 361), CartesianIndex(320, 460), CartesianIndex(9
```

```
centers
```

```
6
```

```
length(radii)
```



```
begin
img_gray;
for i in 1:length(radii)
    img_gray= draw!(img_gray, Ellipse(CirclePointRadius(centers[i],radii[i])))
end
img_gray
end
```

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```
begin
    #method to save a image with a particular directory in a specific format froma a loaded image
    save("assets/resuult-roundchips.png",img_edges)
end
```