```
%Assess Beacon Spot
addpath('2dgaussian301');
addpath('data');
sigma_req = 0.5*(0.95/0.963)*4.2; %uplink budget has a 96.3% airy
 radius of 4.2, or about a 2 sigma (95%) of 4.1433
filename = 'data/2020-09-12-15-21-47_ACQUISITION_exp_380.png';
imdata = imread(filename);
imdata_normalized = imdata/max(max(imdata));
figure;
imagesc(imdata_normalized);
title('Beacon Image (Normalized)');
colorbar;

sz = size(imdata_normalized);
[xi,yi] = meshgrid(1:sz(2), 1:sz(1));
zi = double(imdata_normalized);
results = autoGaussianSurf(xi,yi,zi);
disp(['file: ', filename]);
disp(results);
disp(['sigma_req = ', num2str(sigma_req)]);
if((results.sigmax <= sigma_req) && (results.sigmay <= sigma_req))
    disp('(results.sigmax <= sigma_req)) and (results.sigmax <=
 sigma_req)');
    disp('PASSED');
else
    disp('(results.sigmax > sigma_req)) or (results.sigmax >
 sigma_req)');
    disp('FAILED');
end
hold on;
gaussian_fit = @(xi,yi,results) results.a*exp(-((xi-results.x0).^2/2/
results.sigmax^2 + (yi-results.y0).^2/2/results.sigmay^2)) +
 results.b;
contour(xi,yi,results.G,gaussian_fit(results.x0 + results.sigmax,
 results.y0, results));
hold off;
```

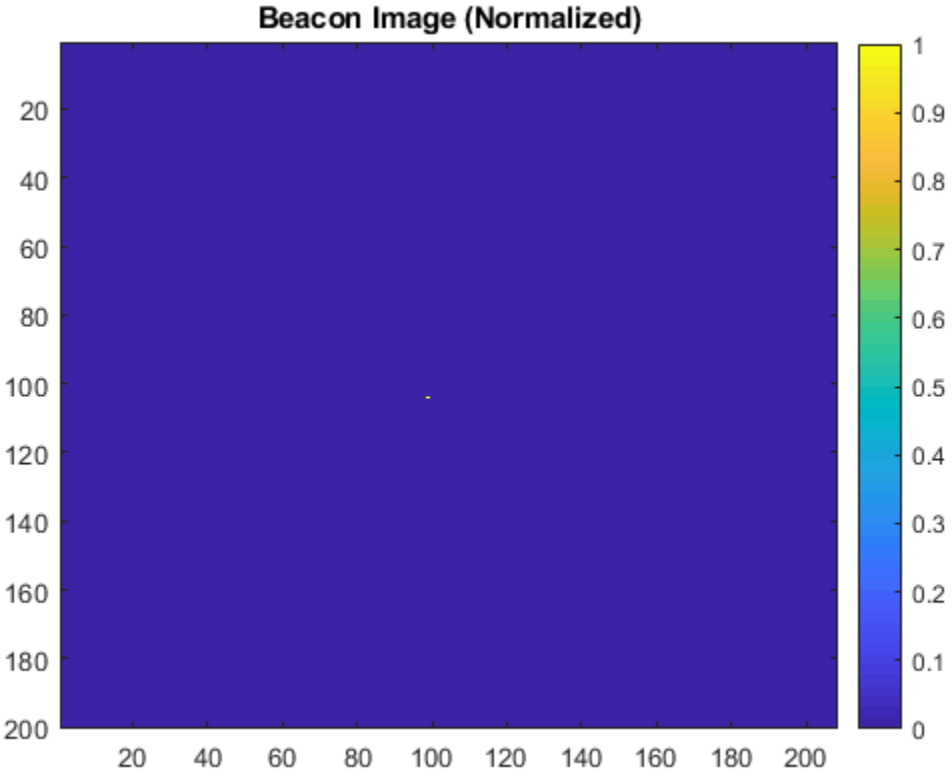
```
                                          Norm of      First-order
 Iteration  Func-count     f(x)             step          optimality
     0          1     4.31822e-11                        1.31e-05
     1          2     2.88731e-11      0.0501793         1.07e-05

Local minimum possible.

lsqcurvefit stopped because the final change in the sum of squares
 relative to
its initial value is less than the default value of the function
 tolerance.
```

```
file: data/2020-09-12-15-21-47_ACQUISITION_exp_380.png
         a: 1.0000
         b: -5.6900e-10
        x0: 99.0000
        y0: 104.0000
    sigmax: 0.1974
    sigmay: 0.1974
         G: [200×208 double]
       sse: 2.8874e-11
      sse0: 1.0000
        r2: 1.0000

sigma_req = 2.0717
(results.sigmax <= sigma_req)) and (results.sigmax <= sigma_req)
PASSED
```



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