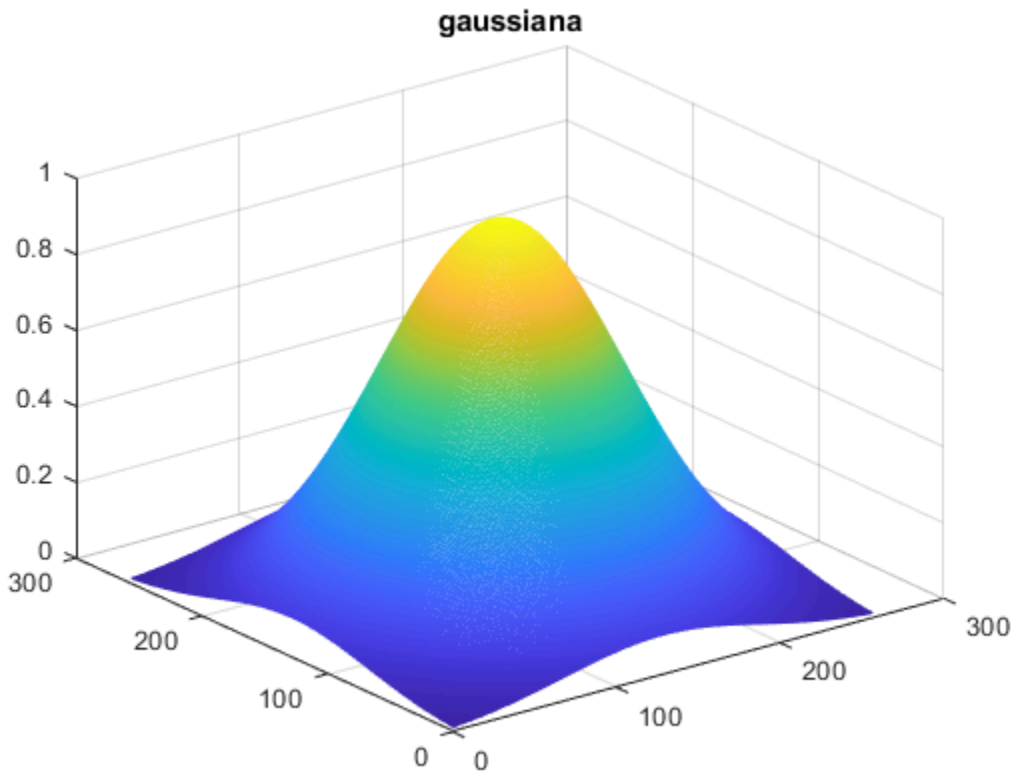
1

```
mat=zeros(257, 257);
a = 60;
for x=-128:128
    for y=-128:128
       mat(x+129, y+129) = exp(double(-(x^2+y^2)) ./ double(2*(a^2)));
    end
end
figure, mesh(mat), title('gaussiana');
```

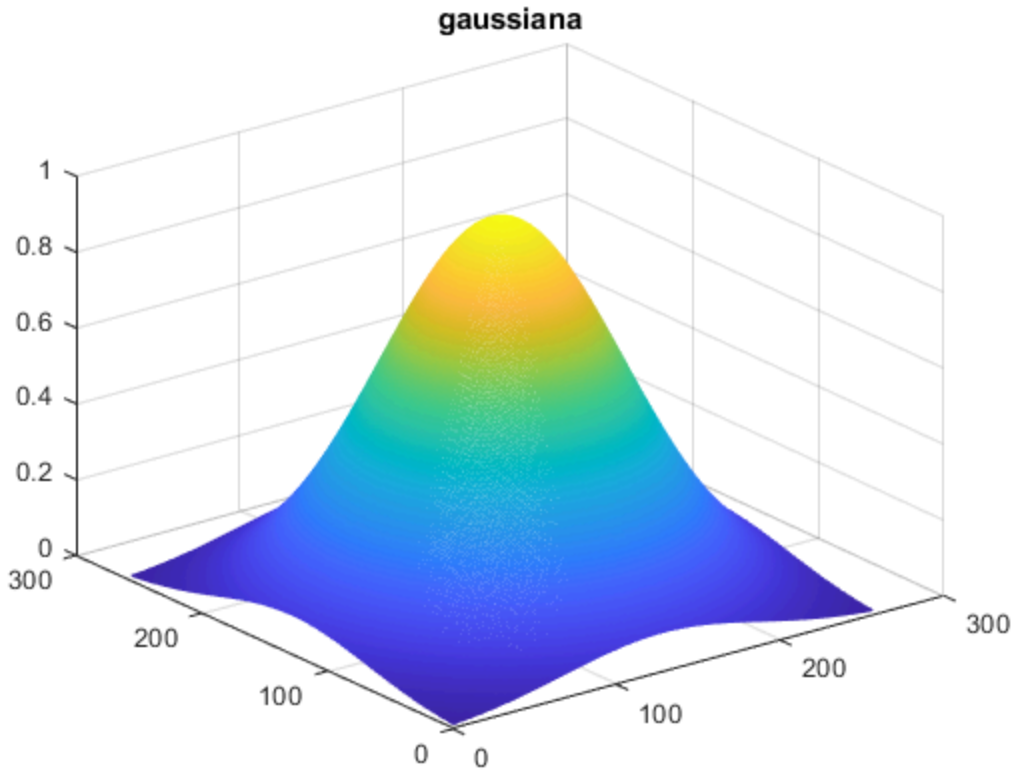


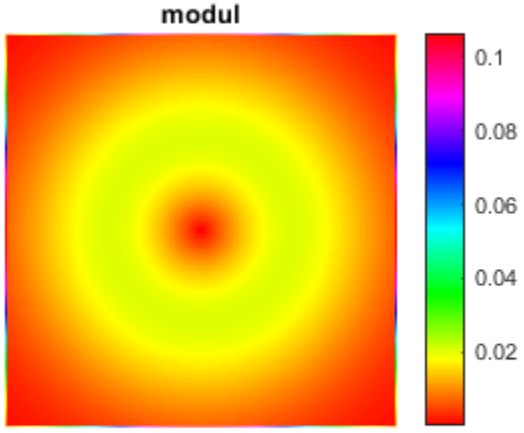
2 3

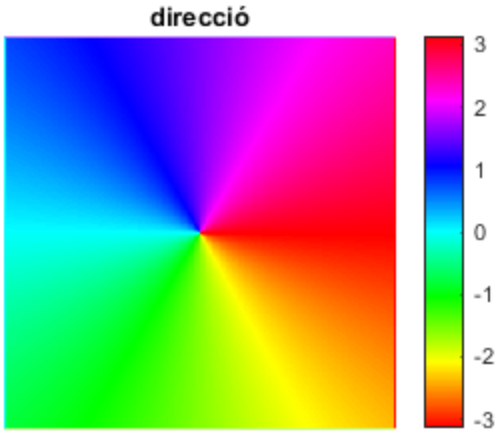
```
h=[1,2,1;0,0,0;-1,-2,-1];
h=h/4;
Gy=imfilter(double(mat),h,'conv'); % gradient vertical
Gx=imfilter(double(mat),h','conv'); % gradient horitzontal

mod=sqrt(Gx.^2+Gy.^2); % mòdul
figure,imshow(mod, []),title('modul')
colormap hsv, colorbar

dir=atan2(Gy,Gx); % direcció
figure, imshow(dir, []), title('direcció')
colormap hsv, colorbar
```


gaussiana
1
0.8
0.6
0.4
0.2
0
300
200
100
0
0
100
200
300


modul
0.1
0.08
0.06
0.04
0.02



4

```
%radians = double(dir);
%double degrees = radians * 180 / M_PI;
%if (radians < 0)
%   degrees = degrees + 360;
%end
%imhist(mat);
```

Published with MATLAB® R2022a