

```
function [Ix, Iy] = ImageDerivatives(I)
%IMAGEDERIVATIVES Returns the image x,y derivatives

% convolution parameter
MODE = 'full';
% preallocate empty matrices
Ix = zeros(size(I));
Iy = zeros(size(I));
% compute the derivatives
Dx = conv2(I, Kx, MODE);
Dy = conv2(I, Ky, MODE);
% discard last column/row and zero out borders
Ix(2:(end-1), 2:(end-1)) = Dx(2:(end-1), 2:(end-2));
Iy(2:(end-1), 2:(end-1)) = Dy(2:(end-2), 2:(end-1));

end
```