# *Edge Detection Methods*

1 Sobel Filter

Clarity: the Sobel filter is extremely effective when it comes to detecting edges in images however it is sensitive to noise

Accuracy: It calculates the gradient magnitude in the horizontal and vertical directions, providing more information about the edge orientation.

Performance: the Sobel filter is considered to be cost effective as it considered to be efficient and require less power processing compared to canny filter .As well as it is exceedingly fast so it can be used in applications where speed is important.
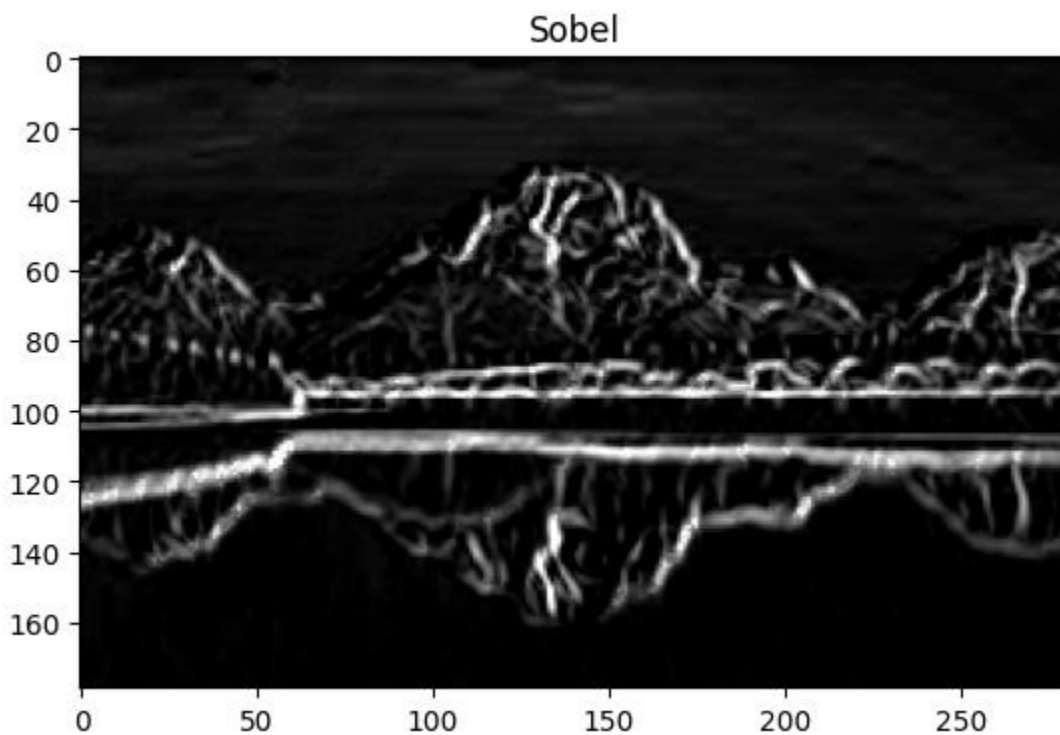

2 Canny Filter

Clarity: it is considered to produce the clearest output out of the 3 filters, It includes steps for edge thinning and edge linking, resulting in more precise edge maps.

Accuracy: it is also the most accurate since it uses complex algorithms and includes multiple steps such as edge thinning and edge linking, which contribute to its high accuracy in producing precise edge maps.

Performance: in applications that require high accuracy we find canny filter used however it is the slowest since it uses the most complex algorithms. As well as more expensive compared to other methods.

canny
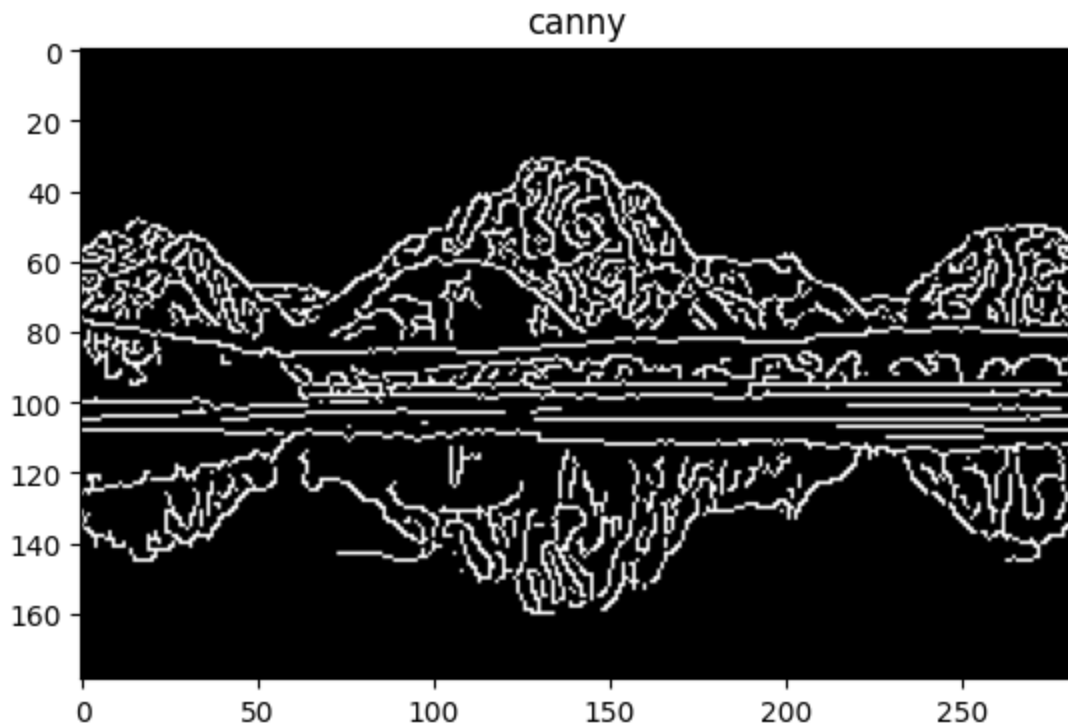
3- Laplacian Filter:

Clarity: is good at detecting edges and noise in an image. It highlights rapid intensity changes in an image, making edges more prominent.

Accuracy: It is sensitive to noise, which can result in false edges being detected so its accuracy is less when it comes to edge detection

Performance: it is fast compared to canny and it generally requires less processing power and memory, making it a more cost-effective option in terms of computational resources.

laplacian