

Block Matching Algorithm (BMA)

By Sang Moon

Block Matching Algorithm (BMA)



Reference image
(average 30 frames)



Window :
40 x 40 image from
reference



Block :
21 x 21 image from
input image



Input image

Find best matching location(x' , y')
in window by squared difference.

Processed image (x , y) = Reference (x' , y')

Average processed images

Block Matching Algorithm (BMA)

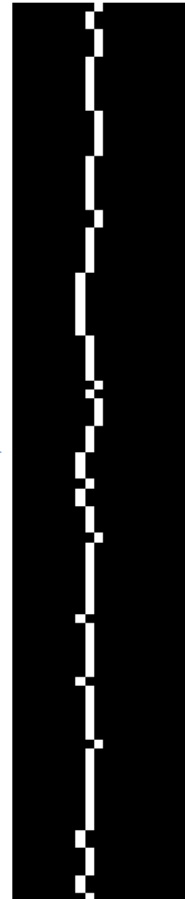
Measuring performance of algorithm using linear regression



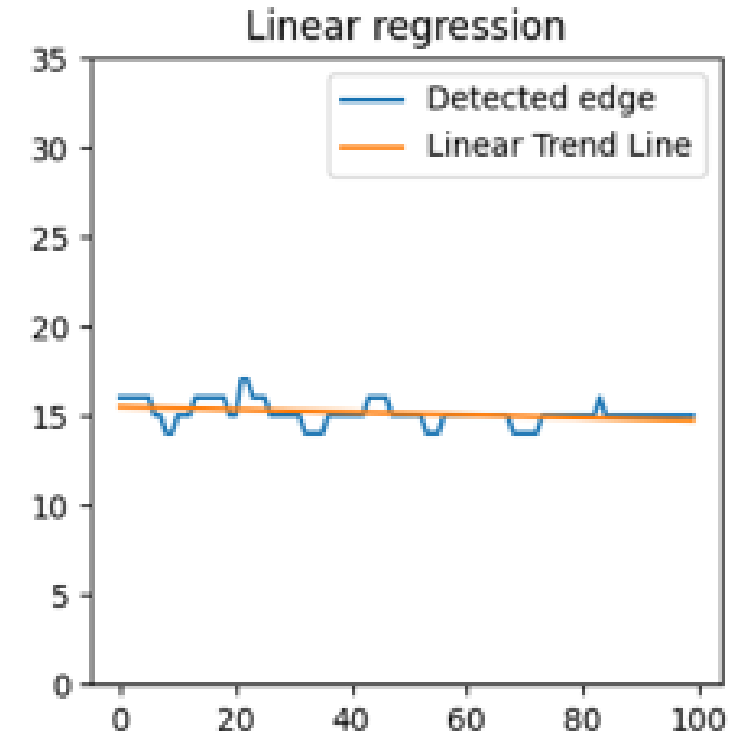
Image without BMA



Edge in image



Edge detection



SSR (sum of squared residuals) = 31.75

Block Matching Algorithm (BMA)

Result



Input image



Result

Block Matching Algorithm (BMA)

Determining size of window and size of block.

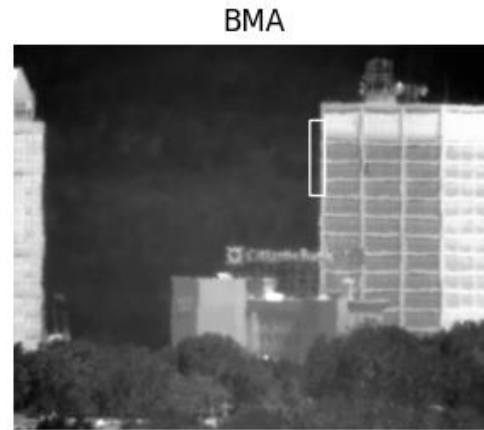
image	SSR (sum of squared regression)
Reference (Window 40, subregion 21)	28.32
Without BMA (Window 40, subregion 21)	31.75
Window 9, subregion 5	64.97
Window 15, subregion 3	36.22
Window 15, subregion 5	55.78
Window 15, subregion 9	57.96
Window 15, subregion 13	36.15
Window 40, subregion 5	43.35
Window 40, subregion 11	46.06
Window 40, subregion 21	20.14
Window 50, subregion 11	49
Window 50, subregion 21	20.14
Window 50, subregion 31	34.46

Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 15

Block size : 3



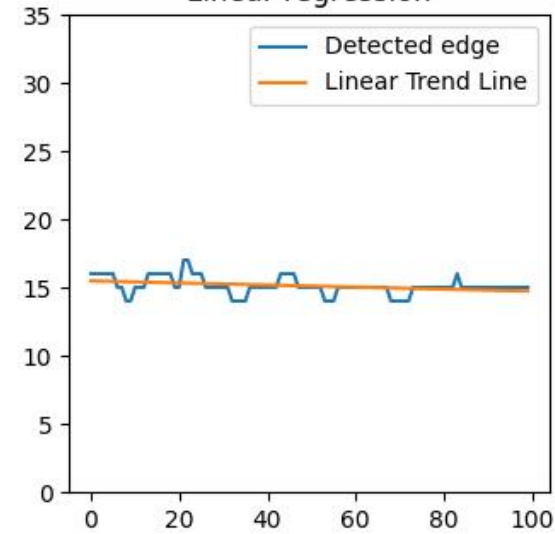
Edge



Edge detection



Linear regression

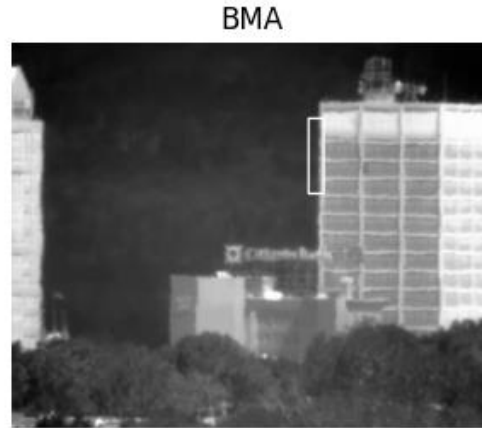


Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 15

Block size : 5



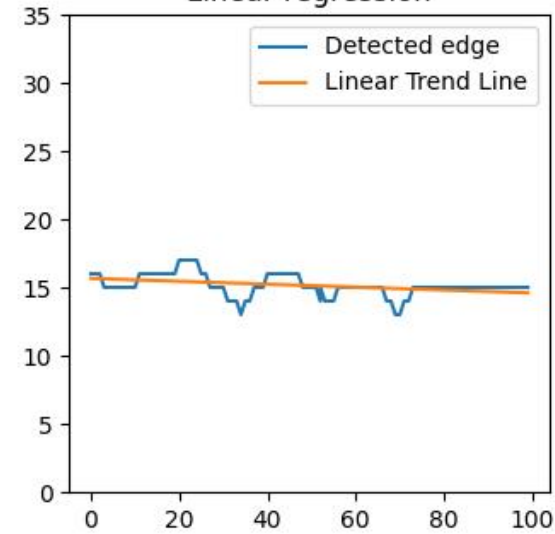
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 15

Block size : 9

BMA



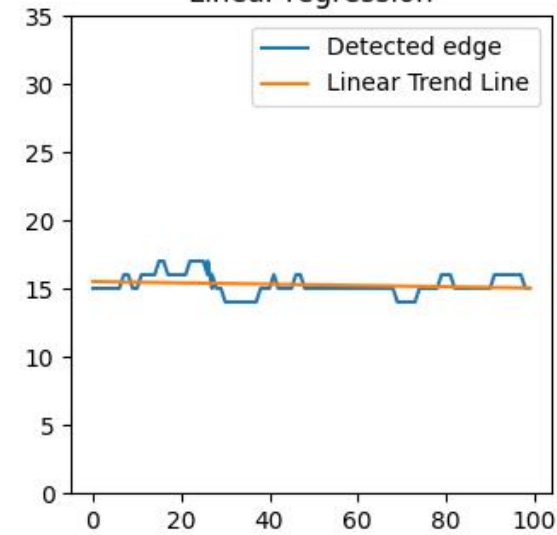
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

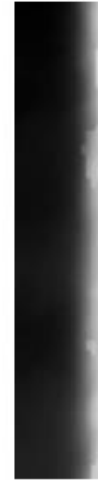
Windows size : 15

Block size : 13

BMA



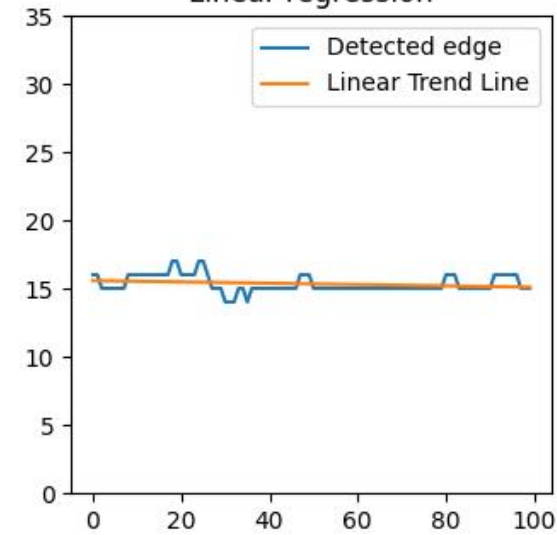
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 40

Block size : 5

BMA



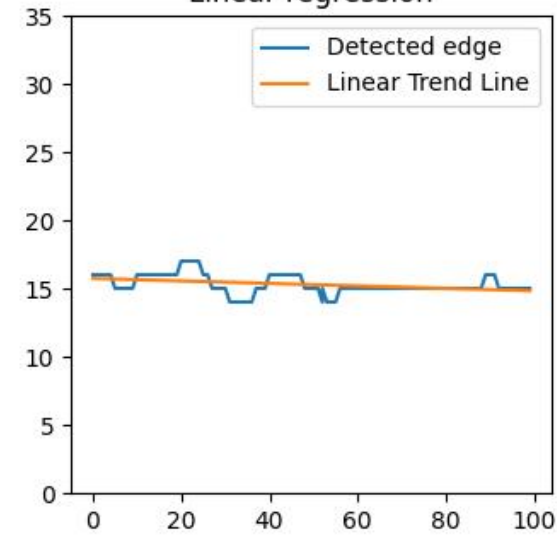
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 40

Block size : 11

BMA



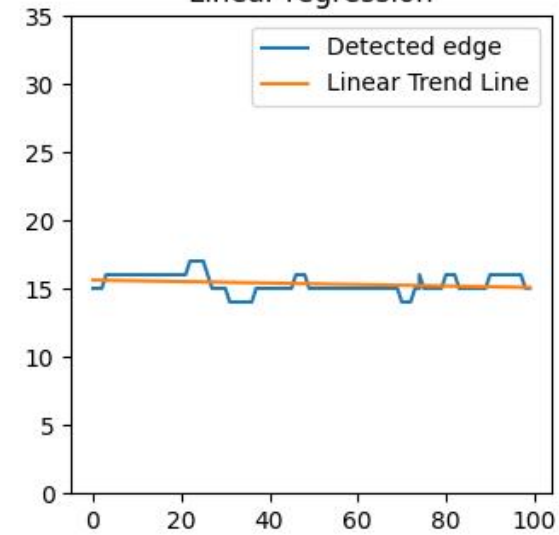
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 40

Block size : 21

BMA



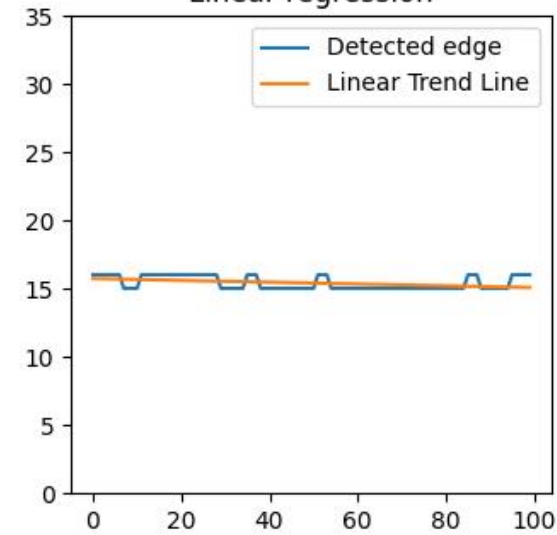
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 40

Block size : 31

BMA



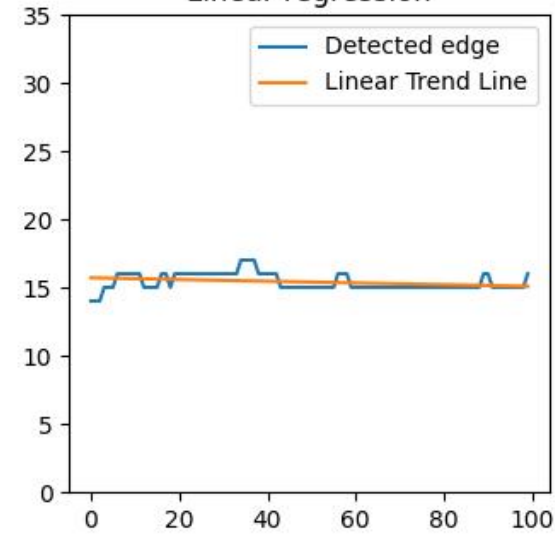
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 50

Block size : 11

BMA



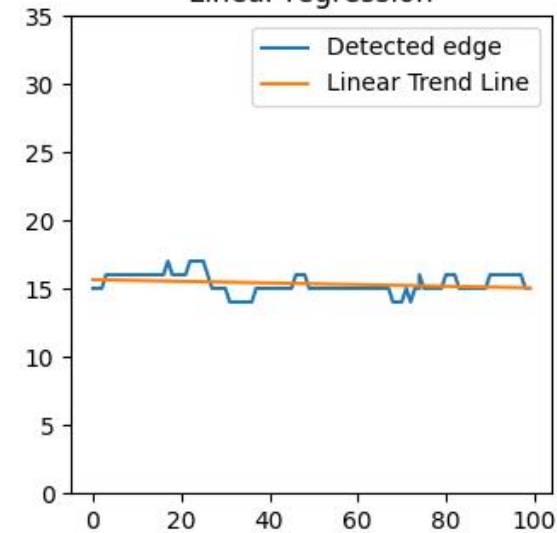
Edge



Edge detection



Linear regression



Block Matching Algorithm (BMA)

Result with different window and block size.

Windows size : 50

Block size : 21

BMA



Edge



Edge detection



Linear regression

