{0: {'LineConvergenceH': 12.372500803855756, 'LineConvergenceV': 11.305611344387337, 'PicConsistency': 236.4071375062959}, 1: {'LineConvergenceH': 12.576518728642348, 'LineConvergenceV': 11.305611344387337, 'PicConsistency': 207.88618201103532}, 2: {'LineConvergenceH': 12.793103264901761, 'LineConvergenceV': 11.305611344387337, 'PicConsistency': 305.2810279558152}}

{4: 162, 6: 535, 5: 71, 3: 286}

/Library/Frameworks/Python.framework/Versions/3.6/bin/python3.6 "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py"  
type the picture number u wanna test or c to cancel: 59  
img\_59\_{0}  
Type in the index for horizontal slice: (range: [0, 479]) 30  
Type in the index for vertical slice: (range: [0, 639]) 300  
/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py:176: RuntimeWarning: overflow encountered in exp  
 return a \* np.exp(- (x - b) \*\* 2 / (2 \* c\_s))  
/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py:176: RuntimeWarning: overflow encountered in multiply  
 return a \* np.exp(- (x - b) \*\* 2 / (2 \* c\_s))  
0:00:00.003400  
0:00:00.001617  
0:00:00.001382  
edge: 106.90241734802697, poly:130.08608608608608, gaussian:137.0  
0:00:00.002707  
edge: 215.8282069593912 poly:200.8108108108108, gaussian:203.94794794794794  
type the picture number u wanna test or c to cancel: 59  
img\_59\_{0}  
Type in the index for horizontal slice: (range: [0, 479]) 200  
Type in the index for vertical slice: (range: [0, 639]) 100  
0:00:00.002029  
0:00:00.001229  
0:00:00.002837  
edge: 92.21657196969699, poly:92.74474474474475, gaussian:92.64864864864865  
0:00:00.002217  
edge: -1 poly:196.7027027027027, gaussian:220.20220220220222  
type the picture number u wanna test or c to cancel: 59  
img\_59\_{0}  
Type in the index for horizontal slice: (range: [0, 479]) 200 400  
Type in the index for vertical slice: (range: [0, 639]) 400  
Bad Input, try again: (range: [0, 479]) 200  
0:00:00.001940  
0:00:00.001643  
0:00:00.003162  
edge: 92.21657196969699, poly:92.74474474474475, gaussian:92.64864864864865  
0:00:00.001327  
edge: 214.17900156837212 poly:194.24424424424424, gaussian:197.81381381381382  
type the picture number u wanna test or c to cancel: 60  
img\_60\_{0}  
Type in the index for horizontal slice: (range: [0, 479]) 200  
Type in the index for vertical slice: (range: [0, 639]) 500  
0:00:00.002107  
0:00:00.001729  
0:00:00.003385  
edge: 92.32846573208725, poly:92.03003003003003, gaussian:92.08708708708708  
0:00:00.001771  
edge: 210.0317535296279 poly:189.0990990990991, gaussian:212.75375375375376  
type the picture number u wanna test or c to cancel: 60  
img\_60\_{0}  
Type in the index for horizontal slice: (range: [0, 479]) 400  
Type in the index for vertical slice: (range: [0, 639]) 100  
0:00:00.003010  
0:00:00.001167  
0:00:00.000944  
edge: 93.30595634480204, poly:94.14414414414415, gaussian:93.81681681681681  
0:00:00.003850  
/Library/Frameworks/Python.framework/Versions/3.6/lib/python3.6/site-packages/scipy/optimize/minpack.py:794: OptimizeWarning: Covariance of the parameters could not be estimated  
 category=OptimizeWarning)  
edge: 307.8291557805356 poly:354.0, gaussian:308.5155155155155  
type the picture number u wanna test or c to cancel: 400  
Traceback (most recent call last):  
 File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1699, in <module>  
 test()  
 File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1073, in test  
 imgr, ori = test\_noise\_reduce(IMGDIR + imgn + ".png", numIMG=5)  
 File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 742, in test\_noise\_reduce  
 imgr = np.uint16(target)  
TypeError: int() argument must be a string, a bytes-like object or a number, not 'NoneType'  
img\_400\_{0}

type the picture number u wanna test or c to cancel: 60

img\_60\_{0}

Type in the index for horizontal slice: (range: [0, 479]) 400

Type in the index for vertical slice: (range: [0, 639]) 400

0:00:00.005662

0:00:00.002262

0:00:00.001326

edge: 93.30595634480204, poly:94.14414414414415, gaussian:93.81681681681681

0:00:00.001187

edge: 212.21240264432728 poly:190.33833833833833, gaussian:193.35135135135135

type the picture number u wanna test or c to cancel: 61

img\_61\_{0}

Type in the index for horizontal slice: (range: [0, 479]) 400

Type in the index for vertical slice: (range: [0, 639]) 400

0:00:00.004118

0:00:00.002345

0:00:00.001601

edge: 93.19376913380157, poly:94.17417417417417, gaussian:94.03603603603604

0:00:00.001510

edge: 212.52264302981456 poly:190.97897897897897, gaussian:194.45845845845847

type the picture number u wanna test or c to cancel: 70

Traceback (most recent call last):

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1699, in <module>

test()

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1073, in test

imgr, ori = test\_noise\_reduce(IMGDIR + imgn + ".png", numIMG=5)

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 742, in test\_noise\_reduce

imgr = np.uint16(target)

TypeError: int() argument must be a string, a bytes-like object or a number, not 'NoneType'

img\_70\_{0}

type the picture number u wanna test or c to cancel: 73

img\_73\_{0}

Type in the index for horizontal slice: (range: [0, 479]) 400

Type in the index for vertical slice: (range: [0, 639]) 400

0:00:00.003744

0:00:00.001954

/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py:176: RuntimeWarning: overflow encountered in exp

return a \* np.exp(- (x - b) \*\* 2 / (2 \* c\_s))

/Library/Frameworks/Python.framework/Versions/3.6/lib/python3.6/site-packages/scipy/optimize/minpack.py:794: OptimizeWarning: Covariance of the parameters could not be estimated

category=OptimizeWarning)

0:00:00.007927

edge: 283.485064401206, poly:323.0, gaussian:286.4864864864865

0:00:00.000992

edge: 195.9362609551483 poly:189.6016016016016, gaussian:190.22222222222223

type the picture number u wanna test or c to cancel: 78

img\_78\_{0}

Type in the index for horizontal slice: (range: [0, 479]) 400

Type in the index for vertical slice: (range: [0, 639]) 260

0:00:00.001703

0:00:00.002443

0:00:00.002832

edge: 366.0705646776132, poly:403.0, gaussian:402.0

0:00:00.001402

edge: 206.59396835595538 poly:198.7157157157157, gaussian:201.34434434434434

type the picture number u wanna test or c to cancel: 100

img\_100\_{0}

Type in the index for horizontal slice: (range: [0, 479]) 120

Type in the index for vertical slice: (range: [0, 639]) 300

0:00:00.001614

0:00:00.001336

0:00:00.001008

edge: 301.99372883964287, poly:333.0, gaussian:272.0

Traceback (most recent call last):

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1699, in <module>

191.3312878110514 279 22

test()

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1207, in test

paramvp, xp2 = poly\_fitting\_params(y\_s\_y, deducedy)

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 539, in poly\_fitting\_params

raise RuntimeError("Bad column or row")

RuntimeError: Bad column or row

/Library/Frameworks/Python.framework/Versions/3.6/bin/python3.6 "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py"

type the picture number u wanna test or c to cancel: 130

img\_130\_{0}

Type in the index for horizontal slice: (range: [0, 479]) 300

Type in the index for vertical slice: (range: [0, 639]) 350

0:00:00.002001

0:00:00.002146

0:00:00.002091

edge: 478.06332670022255, poly:479.2022022022022, gaussian:478.8808808808809

/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py:176: RuntimeWarning: overflow encountered in exp

return a \* np.exp(- (x - b) \*\* 2 / (2 \* c\_s))

0:00:00.001999

edge: 315.1341000267452 poly:314.23823823823824, gaussian:347.0

type the picture number u wanna test or c to cancel: 130

img\_130\_{0}

Type in the index for horizontal slice: (range: [0, 479]) 350

Type in the index for vertical slice: (range: [0, 639]) 400

0:00:00.003800

0:00:00.004702

0:00:00.001156

edge: 476.5766195632225, poly:479.4594594594595, gaussian:477.3223223223223

0:00:00.000888

edge: 310.42203052422025 poly:313.1111111111111, gaussian:312.4864864864865

type the picture number u wanna test or c to cancel: 400

img\_400\_{0}

Traceback (most recent call last):

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1699, in <module>

test()

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 1073, in test

imgr, ori = test\_noise\_reduce(IMGDIR + imgn + ".png", numIMG=5)

File "/Users/albertqu/Documents/7.Research/PEER Research/bridge\_settlement/img\_rec\_module/sig\_proc\_test.py", line 742, in test\_noise\_reduce

imgr = np.uint16(target)

TypeError: int() argument must be a string, a bytes-like object or a number, not 'NoneType'

359.87995897472285

88.40411798434893

[93.68540254026877, 93.8017179566783, 93.46168065092131, 92.27866803160833, 91.12180078476015, 94.23408889623285, 93.79462645414678, 93.68231945365682, 94.52344821790193]

[ 0.28902049 0.40607004 0.06388657 -1.1265927 -2.29076157 0.84116991

0.39893378 0.28591795 1.13235554]

[220.1484212189328, 210.2340513667805, 218.24909885402997, 216.2894882997057, 215.233163204722, 214.516304578561, 215.18434456550622, 213.180453135538, 208.91864694049224, 207.33372502555648, 204.82509073564034]

[ 1.5592648 -0.63437228 1.13902388 0.70544368 0.47172294 0.31311199

0.46092141 0.01754371 -0.92541648 -1.27609369 -1.83114996]

59 (92.40180167262108, 218.5228007112601, 0.9937280337150407, 4.519603519601824)

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0.044895170963250824

88.87724171421279

[94.41678069781962, 94.80718256113846, 93.7493431372386, 92.09850280824557, 91.02761370367102, 93.96069494286324, 93.29754318524716, 93.60527650009608, 94.10335321305612]

[ 0.86134748 1.20982613 0.26558254 -1.2079827 -2.16387463 0.45423838

-0.13770098 0.13698646 0.58157733]

[207.45528775153244, 209.3317033521357, 215.8991337745531, 214.85678951162242, 213.71387405559534, 211.9809780433325, 212.32380156222845, 209.1766587615239, 204.77847009033678, 205.41307746047832, 196.6762021707417]

[-0.33640624 0.0178995 1.25796505 1.06114908 0.8453432 0.51813689

0.58286901 -0.01137609 -0.84184431 -0.72201743 -2.37171865]

60 (95.53988316185166, 213.94547591314804, 1.120303525023466, 5.296034916148595)

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359.99699354123686

88.4535379653655

[94.15441934960904, 94.497105870083, 93.50504298708388, 92.04593559288472, 91.02594298035956, 93.7393726520865, 92.23118844616069, 93.5547186102987, 94.17540839165542]

[ 0.84840975 1.15768275 0.26235059 -1.05448707 -1.97502568 0.47383203

-0.88729723 0.30718261 0.86735226]

[211.76752759266992, 209.47484487219842, 216.44926448580748, 214.51669953766688, 214.03530573490883, 212.7970869007713, 213.02358476709364, 209.91040892762098, 205.83312418760713, 205.9976810218204, 196.91895181382537]

[ 0.32417439 -0.11259118 1.21606467 0.84790304 0.75619552 0.5203097

0.56345849 -0.02961442 -0.80635406 -0.7750053 -2.50454086]

61 (95.33222087950888, 215.5241145255856, 1.1080389271434514, 5.249229597743324)

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359.81608548199785

89.38109739741606

[178.64635124934534, 179.55052284735896, 177.84191495799337, 176.83479036579587, 176.17089549469821, 179.1281695058799, 179.2392015793188, 179.1607670579137, 179.93032121171146]

[ 0.12067151 0.86785583 -0.54409409 -1.37635613 -1.9249819 0.51883381

0.61058788 0.5457716 1.18171149]

[220.3161161936194, 223.90624448839574, 242.61260305613757, 220.5534520526249, 223.32014537561838, 221.19944334118614, 218.61054668895468, 219.3232778551191, 218.58969099663167, 216.64793052557022, 214.37484662414528]

[-0.20497894 0.30168051 2.94162887 -0.17148475 0.21896685 -0.08031876

-0.44567867 -0.34509397 -0.44862194 -0.72265429 -1.0434449 ]

62 (177.7866315138997, 225.48334543832215, 1.210105165576976, 7.085880466623583)

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359.7401128689154

89.38516155944295

[178.13517619465088, 179.93255514275253, 178.51939331470567, 177.38531469147242, 176.2501738193376, 179.39986217717865, 179.8699820264954, 179.94954308615536]

[-0.42729893 0.98171763 -0.12610018 -1.01513672 -1.90500598 0.56412444

0.93266478 0.99503496]

[221.00394395847346, 223.5328466025461, 242.84013424788304, 220.41768266874683, 223.90192221162675, 222.2054754482617, 218.72415890370635, 220.67720222315506, 218.8750019103477, 216.8849754774641, 215.10169206639472]

[-1.70349963e-01 1.90792303e-01 2.94798726e+00 -2.54071546e-01

2.43498484e-01 1.23584518e-03 -4.95916763e-01 -2.17010617e-01

-4.74375489e-01 -7.58563043e-01 -1.01322647e+00]

63 (178.2176977372687, 225.76065087597445, 1.2756265672756038, 7.002510867255217)

------------------------------------------------------

359.77675854977593

89.12109206812774

[178.65043992212853, 179.57425701986654, 177.78390995996696, 176.8845101069533, 176.38908043439204, 179.34808482136677, 179.30945088088967, 179.35758926977368, 180.2089671422113]

[ 0.03134083 0.78084153 -0.67168234 -1.40137312 -1.80331944 0.59734609

0.56600205 0.60505713 1.29578727]

[222.13362504393584, 230.2192537645863, 241.78283208008463, 225.52052942941398, 223.19806670592286, 220.67874967927764, 218.22508828830829, 218.8146432465948, 218.209001373482, 216.1377198445905, 213.69605273861606]

[-0.06268319 1.02078016 2.57028406 0.39115743 0.07995056 -0.25763453

-0.58642185 -0.50742228 -0.58857747 -0.8661264 -1.1933065 ]

64 (178.05929091370285, 227.57557141729254, 1.232576692361491, 7.462761648630135)

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359.4117571090748

89.03876750431125

[266.0028014485583, 265.7205304755091, 261.5121069367566, 258.7672349777751, 269.2266773117468, 270.4073865608022, 268.5086416853203, 270.1096558454314]

[-0.07062561 -0.14205927 -1.2070752 -1.90171355 0.74523314 1.04403248

0.56352154 0.96868646]

[213.20054528643314, 214.60582799955782, 208.29027698642318, 192.55341908192574, 61.34176680671812, 164.17261606655694, 204.5993625913619, 202.7206546414784, 204.25021234728126, 208.5024012131421, 203.97250994618653]

[ 0.57199449 0.60511087 0.45628091 0.08543188 -3.00665381 -0.58337972

0.36930217 0.32502923 0.36107423 0.46127975 0.35452999]

65 (261.70086302253935, 187.7655263510957, 3.9515122758252583, 42.43467520158651)

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359.39332033631547

89.47350107256321

[266.236508704724, 266.07363925501915, 261.5074065844881, 259.0260308071359, 269.47637088707717, 270.7633136985463, 268.4843828374595, 270.4720900547259]

[-0.06717067 -0.10792193 -1.25043056 -1.871291 0.74346926 1.06547284

0.49526576 0.99260631]

[212.7453652919241, 214.60077579000466, 208.57293723415228, 205.2917148949746, 202.57571878946231, 204.23048556253303, 208.14717855483897, 207.69119614702532]

[ 1.24294038 1.72707849 0.15421559 -0.70196409 -1.41065751 -0.978874

0.04312104 -0.07585989]

66 (263.12260735580236, 208.6888275933953, 3.996672369259087, 3.8323992242499187)

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359.4142597625564

89.37998475385959

[266.3593686917316, 261.6189437120199, 260.7751171121938, 261.905992626769, 259.23071544040755, 270.19943407464865, 271.3459433863153, 267.8838494344267, 270.4487494373377]

[ 0.18718586 -0.88244261 -1.07284347 -0.81767296 -1.42132193 1.05365739

1.3123555 0.53116937 1.10991285]

[213.10014176717718, 213.67579384616647, 208.4047086349377, 205.0117219330844, 203.53035260888507, 201.32850810413083, 203.39818408331007, 207.16299944322844, 207.14819033773801]

[ 1.5267952 1.67024875 0.3566847 -0.48885377 -0.85801371 -1.40671738

-0.89095035 0.04724851 0.04355805]

67 (263.2208458621908, 207.81872361983278, 4.431842546811981, 4.012811725696324)

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No image 68!

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No image 69!

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No image 70!

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No image 71!

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No image 72!

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357.7678465336154

87.78691569996337

[266.31097129104415, 269.84905180279287, 266.16793145841626, 282.9391631924785, 280.81040729244614, 282.2232182137668, 281.06517159346714, 281.902230973819]

[-1.43238665 -0.93049255 -1.45267756 0.92640408 0.6244296 0.82484377

0.66056916 0.77931015]

[212.40118101572804, 210.5659931607876, 208.71709219658428, 206.6692911298078, 210.66139248347687, 197.62342668482276, 195.53689499453534, 194.46876626700384, 192.14235789115997, 195.44884411253864, 191.14652554500708]

[ 1.38417712 1.15330715 0.92071204 0.66309495 1.16530855 -0.47489125

-0.73738073 -0.87175327 -1.16441967 -0.74845769 -1.28969719]

73 (273.4831703233573, 203.64459660353015, 7.04945617162013, 7.94901069703423)

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357.7416066164739

87.80801476268694

[266.0264288269463, 275.1831351408068, 265.31857643358444, 299.36849050245655, 280.6650356526041, 281.95500211572664, 281.2880816037447, 281.80115929611003]

[-1.28482046 -0.37454179 -1.35518887 2.02975211 0.17042023 0.29865727

0.23235794 0.28336358]

[213.68024445994538, 211.23915247891262, 210.16254021146372, 208.28602641779185, 190.48760741941115, 198.7205195614438, 192.92014362950215, 196.5652880048653, 192.62842504690155]

[ 1.39656548 1.1136026 0.98880545 0.7712865 -1.29184428 -0.33751376

-1.00987315 -0.5873407 -1.04368815]

74 (271.2155253245718, 204.14174444517488, 10.059234197590264, 8.626898083569905)

------------------------------------------------------

357.7988790891911

87.80705602984274

[265.88085071097714, 269.56655237342363, 265.28114911918544, 299.3379979134317, 280.40911163440614, 281.73165116697174, 280.96140276952264, 281.25513769245106]

[-1.16444502 -0.81185294 -1.22181538 2.03622778 0.22539881 0.35191935

0.27823365 0.30633376]

[213.57138160754116, 211.1357371412334, 209.55838037253807, 207.38590479084672, 211.92405747891448, 198.20233404041838, 190.05609350248963, 194.91015271228585, 192.6661214503007, 191.99685924689842, 192.51034553080945]

[ 1.37538185 1.10316538 0.92687426 0.6840705 1.19127093 -0.34231873

-1.25277217 -0.71026488 -0.96106596 -1.03586514 -0.97847604]

75 (270.6956495432092, 203.85454956730555, 10.453160716022577, 8.947454341776009)

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No image 76!

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357.8298389596565

88.57578759235295

[346.7495392570337, 349.05295087552236, 350.66046096836277, 347.1280982132571, 358.56825152525295, 360.24644472493384, 359.92814003927117, 361.9073707371612]

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0.19022426 -1.115692 0.12219417 -1.97535686 -0.5947413 ]

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