CV Project 01 Two Auto threshold Selections CPP
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Project Due 02/09/23

Algorithm Steps:

Step 0: inFile1, inFile2, outFile1, deBugFile-->open via argv []
Step 1: numRows, numCols, minVal, maxVal-->read from inFile1.
x1, y1, x2, y2-->read from inFile2. histAry-->dynamically allocate (size of maxVal + 1) and initialized to zero. maxHeight-->loadHist (histAry, inFile) // loadHist ( ) returns the largest value of histogram.
dynamically allocate all other arrays and initialized to zero.
Step 2: dispHist (...)
Step 3: deepestThrVal-->deepestConcavity (x1, y1, x2, y2, histAry, deBugFile)
outFile1-->output DeepestThrVal to outFile with caption.
Step 4: BiGaussThrVal-->biGaussian (histAry, GaussAry, maxHeight, minVal, maxVal, deBugFile)
outFile1-->output BiGaussThrVal with caption

output1.txt

```
0 10: ++++++++++
1 14: ++++++++++++++
2 17: +++++++++++++++++
3 20: ++++++++++++++++++++
4 22: ++++++++++++++++++++++
5 31: +++++++++++++++++++++++++++++++
6 28: ++++++++++++++++++++++++++++
7 33: +++++++++++++++++++++++++++++++++
8 45: +++++++++++++++++++++++++++++++++++++++++++++
9 56: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++
10 70: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
11 90: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
12 120: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
13 150: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
14 192: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
15 210: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
16 192: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
17 172: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
18 132: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
19 100: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
20 89: +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
21 78: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
22 42: ++++++++++++++++++++++++++++++++++++++++++
23 20: ++++++++++++++++++++
24 18: ++++++++++++++++++
25 10: ++++++++++
26 9: +++++++++
27 8: ++++++++
28 8: ++++++++
29 7: +++++++
30 6: ++++++
31 5: +++++
32 4: ++++
33 4: ++++
34 6: ++++++
35 8: ++++++++
36 10: ++++++++++
37 12: ++++++++++++
38 22: ++++++++++++++++++++++
39 26: ++++++++++++++++++++++++++
40 40: ++++++++++++++++++++++++++++++++++++++++
41 45: +++++++++++++++++++++++++++++++++++++++++++++
42 72: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
43 80: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
44 90: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
45 100: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
46 120: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
47 150: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
48 188: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
49 190: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
50 170: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
51 140: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
52 120: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
53 110: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
54 90: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
55 80: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
56 70: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
57 60: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
58 30: ++++++++++++++++++++++++++++++
59 20: ++++++++++++++++++++
60 12: ++++++++++++
61 9: +++++++++
62 8: ++++++++
63 6: ++++++
```

the FIRST peak is (15, 210)
the SECOND peak is (49, 190)

deepestThrVal: 32
biGaussVal: 32

debug.txt

++++Entering deepestConcavity Method++++
maxGap: 196
thr: 32
++++leaving deepestConcavity method++++
^^^^Entering deepestConcavity Method^^^^
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 210
result: 3.375
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 1.93269
_____Leaving computeVar method returning result_____
sum is: 579.259
####leaving fitGauss method####
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 210
result: 32.9012
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 299.871
_____Leaving computeVar method returning result_____
sum is: 5234.7
####leaving fitGauss method####
dividePt is: 6
sum1 is: 579.259
sum2 is: 5234.7
total is: 5813.96
minSumDiff is: 5813.96
bestThr is: 6
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 210
result: 3.93182
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 2.68182
_____Leaving computeVar method returning result_____
sum is: 671.108
####leaving fitGauss method####
####Entering fitGauss method####

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        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 33.0919
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 296.829
        _______Leaving computeVar method returning result_______
        sum is: 5193.72
####leaving fitGauss method####
dividePt is: 7
sum1 is: 671.108
 sum2 is: 5193.72
 total is: 5864.82
 minSumDiff is: 5813.96
 bestThr is: 6
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 4.54545
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 3.64242
        _______Leaving computeVar method returning result_______
        sum is: 768.806
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 33.3119
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 293.544
        _______Leaving computeVar method returning result_______
        sum is: 5155.2
####leaving fitGauss method####
dividePt is: 8
sum1 is: 768.806
 sum2 is: 5155.2
 total is: 5924.01
 minSumDiff is: 5813.96
 bestThr is: 6
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 5.28571
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 4.87143
        _______Leaving computeVar method returning result_______
        sum is: 857.758
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
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                    maxHeight: 210
                    result: 33.6062
          %%%%Leaving computeMean method maxHeight is an result%%%%%
          _______Entering computeVar method_______
                    result: 289.422
          _______Leaving computeVar method returning result_______
          sum is: 5131.82
####leaving fitGauss method####
dividePt is: 9
sum1 is: 857.758
 sum2 is: 5131.82
 total is: 5989.58
 minSumDiff is: 5813.96
 bestThr is: 6
####Entering fitGauss method####
          %%%%Entering computeMean method%%%%
                    maxHeight: 210
                    result: 6.06767
          %%%%Leaving computeMean method maxHeight is an result%%%%%
          _______Entering computeVar method_______
                    result: 6.14286
          _______Leaving computeVar method returning result_______
          sum is: 927.068
####leaving fitGauss method####
####Entering fitGauss method####
          %%%%Entering computeMean method%%%%
                    maxHeight: 210
                    result: 33.9675
          %%%%Leaving computeMean method maxHeight is an result%%%%%
          _______Entering computeVar method_______
                    result: 284.651
          _______Leaving computeVar method returning result_______
          sum is: 5121.29
####leaving fitGauss method####
dividePt is: 10
sum1 is: 927.068
 sum2 is: 5121.29
 total is: 6048.35
 minSumDiff is: 5813.96
 bestThr is: 6
####Entering fitGauss method####
          %%%%Entering computeMean method%%%%
                    maxHeight: 210
                    result: 6.8869
          %%%%Leaving computeMean method maxHeight is an result%%%%%
          _______Entering computeVar method_______
                    result: 7.41071
          _______Leaving computeVar method returning result_______
          sum is: 976.432
####leaving fitGauss method####
####Entering fitGauss method####
          %%%%Entering computeMean method%%%%
                    maxHeight: 210
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                result: 34.4156
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 279.032
        _______Leaving computeVar method returning result_______
        sum is: 5133.05
####leaving fitGauss method####
dividePt is: 11
sum1 is: 976.432
 sum2 is: 5133.05
 total is: 6109.48
 minSumDiff is: 5813.96
 bestThr is: 6
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 7.75587
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 8.65962
        _______Leaving computeVar method returning result_______
        sum is: 1002.83
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 34.9923
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 272.068
        _______Leaving computeVar method returning result_______
        sum is: 5144.82
####leaving fitGauss method####
dividePt is: 12
sum1 is: 1002.83
 sum2 is: 5144.82
 total is: 6147.65
 minSumDiff is: 5813.96
 bestThr is: 6
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 8.68864
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 9.84432
        _______Leaving computeVar method returning result_______
        sum is: 990.061
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 35.7731
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%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 262.745
_____Leaving computeVar method returning result_____
sum is: 5119.36
####leaving fitGauss method####
dividePt is: 13
sum1 is: 990.061
sum2 is: 5119.36
total is: 6109.42
minSumDiff is: 5813.96
bestThr is: 6
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 210
result: 9.61782
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 10.8635
_____Leaving computeVar method returning result_____
sum is: 1004.91
####leaving fitGauss method####
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 210
result: 36.7825
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 250.386
_____Leaving computeVar method returning result_____
sum is: 5039.86
####leaving fitGauss method####
dividePt is: 14
sum1 is: 1004.91
sum2 is: 5039.86
total is: 6044.77
minSumDiff is: 5813.96
bestThr is: 6
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 210
result: 10.5653
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 11.7714
_____Leaving computeVar method returning result_____
sum is: 975.834
####leaving fitGauss method####
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 210
result: 38.1529
%%%%Leaving computeMean method maxHeight is an result%%%%%

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        _______Entering computeVar method_______
                result: 232.348
        _______Leaving computeVar method returning result_______
        sum is: 4881.03
####leaving fitGauss method####
dividePt is: 15
sum1 is: 975.834
 sum2 is: 4881.03
 total is: 5856.87
 minSumDiff is: 5813.96
 bestThr is: 6
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 11.4135
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 12.561
        _______Leaving computeVar method returning result_______
        sum is: 925.599
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 39.7834
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 208.3
        _______Leaving computeVar method returning result_______
        sum is: 4640.38
####leaving fitGauss method####
dividePt is: 16
sum1 is: 925.599
 sum2 is: 4640.38
 total is: 5565.98
 minSumDiff is: 5565.98
 bestThr is: 16
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 12.0961
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 13.3558
        _______Leaving computeVar method returning result_______
        sum is: 855.991
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 41.4201
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
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                result: 181.031
        _______Leaving computeVar method returning result_______
        sum is: 4341.32
####leaving fitGauss method####
dividePt is: 17
sum1 is: 855.991
 sum2 is: 4341.32
 total is: 5197.31
 minSumDiff is: 5197.31
 bestThr is: 17
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 12.6731
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 14.2811
        _______Leaving computeVar method returning result_______
        sum is: 775.732
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 43.0244
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 151.172
        _______Leaving computeVar method returning result_______
        sum is: 3948.2
####leaving fitGauss method####
dividePt is: 18
sum1 is: 775.732
 sum2 is: 3948.2
 total is: 4723.93
 minSumDiff is: 4723.93
 bestThr is: 18
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 13.1142
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 15.2509
        _______Leaving computeVar method returning result_______
        sum is: 698.714
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 44.3532
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 124.183
```

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        _______Leaving computeVar method returning result_______
        sum is: 3508.15
####leaving fitGauss method####
dividePt is: 19
sum1 is: 698.714
 sum2 is: 3508.15
 total is: 4206.86
 minSumDiff is: 4206.86
 bestThr is: 19
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 13.4616
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 16.2751
        _______Leaving computeVar method returning result_______
        sum is: 632.375
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 45.4158
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 101.318
        _______Leaving computeVar method returning result_______
        sum is: 3043.77
####leaving fitGauss method####
dividePt is: 20
sum1 is: 632.375
 sum2 is: 3043.77
 total is: 3676.15
 minSumDiff is: 3676.15
 bestThr is: 20
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 13.788
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 17.4907
        _______Leaving computeVar method returning result_______
        sum is: 560.519
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 46.4005
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 79.2451
        _______Leaving computeVar method returning result_______
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        sum is: 2514.55
####leaving fitGauss method####
dividePt is: 21
sum1 is: 560.519
 sum2 is: 2514.55
 total is: 3075.07
 minSumDiff is: 3075.07
 bestThr is: 21
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.0903
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 18.8458
        _______Leaving computeVar method returning result_______
        sum is: 498.14
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 47.2934
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 58.5561
        _______Leaving computeVar method returning result_______
        sum is: 1911.13
####leaving fitGauss method####
dividePt is: 22
sum1 is: 498.14
 sum2 is: 1911.13
 total is: 2409.27
 minSumDiff is: 2409.27
 bestThr is: 22
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.2648
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 19.7803
        _______Leaving computeVar method returning result_______
        sum is: 499.789
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 47.7814
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 47.1038
        _______Leaving computeVar method returning result_______
        sum is: 1522.89
```

```
####leaving fitGauss method####
dividePt is: 23
sum1 is: 499.789
 sum2 is: 1522.89
 total is: 2022.68
 minSumDiff is: 2022.68
 bestThr is: 23
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.3557
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 20.3604
        _______Leaving computeVar method returning result_______
        sum is: 517.161
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.0111
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 41.7946
        _______Leaving computeVar method returning result_______
        sum is: 1321.48
####leaving fitGauss method####
dividePt is: 24
sum1 is: 517.161
 sum2 is: 1321.48
 total is: 1838.64
 minSumDiff is: 1838.64
 bestThr is: 24
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.4451
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 21.0258
        _______Leaving computeVar method returning result_______
        sum is: 540.234
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.2132
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 37.2539
        _______Leaving computeVar method returning result_______
        sum is: 1134.84
####leaving fitGauss method####
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```
dividePt is: 25
sum1 is: 540.234
 sum2 is: 1134.84
 total is: 1675.08
 minSumDiff is: 1675.08
 bestThr is: 25
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.4992
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 21.4849
        _______Leaving computeVar method returning result_______
        sum is: 555.573
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.3222
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 34.8877
        _______Leaving computeVar method returning result_______
        sum is: 1031.13
####leaving fitGauss method####
dividePt is: 26
sum1 is: 555.573
 sum2 is: 1031.13
 total is: 1586.7
 minSumDiff is: 1586.7
 bestThr is: 26
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.552
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 21.9903
        _______Leaving computeVar method returning result_______
        sum is: 579.175
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.417
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 32.9118
        _______Leaving computeVar method returning result_______
        sum is: 940.729
####leaving fitGauss method####
dividePt is: 27
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```
sum1 is: 579.175
 sum2 is: 940.729
 total is: 1519.9
 minSumDiff is: 1519.9
 bestThr is: 27
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.6026
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 22.529
        _______Leaving computeVar method returning result_______
        sum is: 605.096
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.4981
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 31.2907
        _______Leaving computeVar method returning result_______
        sum is: 863.798
####leaving fitGauss method####
dividePt is: 28
sum1 is: 605.096
 sum2 is: 863.798
 total is: 1468.89
 minSumDiff is: 1468.89
 bestThr is: 28
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.6569
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 23.1609
        _______Leaving computeVar method returning result_______
        sum is: 633.822
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.576
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 29.8075
        _______Leaving computeVar method returning result_______
        sum is: 791.089
####leaving fitGauss method####
dividePt is: 29
sum1 is: 633.822
```

```
 sum2 is: 791.089
 total is: 1424.91
 minSumDiff is: 1424.91
 bestThr is: 29
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.7075
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 23.8018
        _______Leaving computeVar method returning result_______
        sum is: 663.089
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.6414
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 28.6237
        _______Leaving computeVar method returning result_______
        sum is: 733.785
####leaving fitGauss method####
dividePt is: 30
sum1 is: 663.089
 sum2 is: 733.785
 total is: 1396.87
 minSumDiff is: 1396.87
 bestThr is: 30
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.7536
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 24.4334
        _______Leaving computeVar method returning result_______
        sum is: 690.851
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.6949
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.7049
        _______Leaving computeVar method returning result_______
        sum is: 689.868
####leaving fitGauss method####
dividePt is: 31
sum1 is: 690.851
 sum2 is: 689.868
```

```
 total is: 1380.72
 minSumDiff is: 1380.72
 bestThr is: 31
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.7944
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 25.0321
        _______Leaving computeVar method returning result_______
        sum is: 715.856
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.7373
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.0211
        _______Leaving computeVar method returning result_______
        sum is: 657.503
####leaving fitGauss method####
dividePt is: 32
sum1 is: 715.856
 sum2 is: 657.503
 total is: 1373.36
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.8288
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 25.5721
        _______Leaving computeVar method returning result_______
        sum is: 739.792
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.7695
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 26.5336
        _______Leaving computeVar method returning result_______
        sum is: 635.766
####leaving fitGauss method####
dividePt is: 33
sum1 is: 739.792
 sum2 is: 635.766
 total is: 1375.56
```

```
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.8651
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 26.1803
        _______Leaving computeVar method returning result_______
        sum is: 767.962
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.7998
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 26.1035
        _______Leaving computeVar method returning result_______
        sum is: 617.393
####leaving fitGauss method####
dividePt is: 34
sum1 is: 767.962
 sum2 is: 617.393
 total is: 1385.36
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 14.9223
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.1932
        _______Leaving computeVar method returning result_______
        sum is: 816.258
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.8427
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 25.5434
        _______Leaving computeVar method returning result_______
        sum is: 594.349
####leaving fitGauss method####
dividePt is: 35
sum1 is: 816.258
 sum2 is: 594.349
 total is: 1410.61
 minSumDiff is: 1373.36
```

```
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 15.002
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 28.6781
        _______Leaving computeVar method returning result_______
        sum is: 883.01
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.8963
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 24.8997
        _______Leaving computeVar method returning result_______
        sum is: 567.798
####leaving fitGauss method####
dividePt is: 36
sum1 is: 883.01
 sum2 is: 567.798
 total is: 1450.81
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 15.1056
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 30.7014
        _______Leaving computeVar method returning result_______
        sum is: 970.973
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 48.9591
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 24.2059
        _______Leaving computeVar method returning result_______
        sum is: 540.182
####leaving fitGauss method####
dividePt is: 37
sum1 is: 970.973
 sum2 is: 540.182
 total is: 1511.15
 minSumDiff is: 1373.36
 bestThr is: 32
```

```
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 15.2345
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 33.3263
        _______Leaving computeVar method returning result_______
        sum is: 1092.15
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 49.0294
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 23.5039
        _______Leaving computeVar method returning result_______
        sum is: 520.302
####leaving fitGauss method####
dividePt is: 38
sum1 is: 1092.15
 sum2 is: 520.302
 total is: 1612.45
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 15.4777
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 38.4456
        _______Leaving computeVar method returning result_______
        sum is: 1310.78
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 49.1495
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 22.4203
        _______Leaving computeVar method returning result_______
        sum is: 493.146
####leaving fitGauss method####
dividePt is: 39
sum1 is: 1310.78
 sum2 is: 493.146
 total is: 1803.92
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
```

```
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 15.7709
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 44.7766
        _______Leaving computeVar method returning result_______
        sum is: 1579.96
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 49.2818
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 21.3521
        _______Leaving computeVar method returning result_______
        sum is: 471.566
####leaving fitGauss method####
dividePt is: 40
sum1 is: 1579.96
 sum2 is: 471.566
 total is: 2051.53
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 16.2267
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 54.7714
        _______Leaving computeVar method returning result_______
        sum is: 1940.84
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 49.4719
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 19.9893
        _______Leaving computeVar method returning result_______
        sum is: 448.84
####leaving fitGauss method####
dividePt is: 41
sum1 is: 1940.84
 sum2 is: 448.84
 total is: 2389.68
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
```

```
                maxHeight: 210
                result: 16.7402
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 66.0926
        _______Leaving computeVar method returning result_______
        sum is: 2321.34
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 49.6716
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 18.7297
        _______Leaving computeVar method returning result_______
        sum is: 427.028
####leaving fitGauss method####
dividePt is: 42
sum1 is: 2321.34
 sum2 is: 427.028
 total is: 2748.37
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 17.551
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 83.7954
        _______Leaving computeVar method returning result_______
        sum is: 2801.45
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 49.9722
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 17.068
        _______Leaving computeVar method returning result_______
        sum is: 396.692
####leaving fitGauss method####
dividePt is: 43
sum1 is: 2801.45
 sum2 is: 396.692
 total is: 3198.14
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
```

```
                result: 18.4275
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 102.446
        _______Leaving computeVar method returning result_______
        sum is: 3219.07
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 50.2897
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 15.531
        _______Leaving computeVar method returning result_______
        sum is: 404.742
####leaving fitGauss method####
dividePt is: 44
sum1 is: 3219.07
 sum2 is: 404.742
 total is: 3623.81
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 19.3813
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 122.105
        _______Leaving computeVar method returning result_______
        sum is: 3599.93
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 50.6293
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 14.1176
        _______Leaving computeVar method returning result_______
        sum is: 454.917
####leaving fitGauss method####
dividePt is: 45
sum1 is: 3599.93
 sum2 is: 454.917
 total is: 4054.85
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 20.4007
```

```
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 142.325
        _______Leaving computeVar method returning result_______
        sum is: 3940.33
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 50.9885
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 12.8698
        _______Leaving computeVar method returning result_______
        sum is: 510.321
####leaving fitGauss method####
dividePt is: 46
sum1 is: 3940.33
 sum2 is: 510.321
 total is: 4450.66
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 21.5674
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 164.343
        _______Leaving computeVar method returning result_______
        sum is: 4271.78
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 51.4022
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 11.7001
        _______Leaving computeVar method returning result_______
        sum is: 553.514
####leaving fitGauss method####
dividePt is: 47
sum1 is: 4271.78
 sum2 is: 553.514
 total is: 4825.29
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 22.9382
        %%%%Leaving computeMean method maxHeight is an result%%%%%
```

```
        _______Entering computeVar method_______
                result: 188.468
        _______Leaving computeVar method returning result_______
        sum is: 4578.33
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 51.9113
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 10.5544
        _______Leaving computeVar method returning result_______
        sum is: 569.702
####leaving fitGauss method####
dividePt is: 48
sum1 is: 4578.33
 sum2 is: 569.702
 total is: 5148.03
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 24.5241
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 213.772
        _______Leaving computeVar method returning result_______
        sum is: 4837.03
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 52.5744
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 9.30839
        _______Leaving computeVar method returning result_______
        sum is: 594.969
####leaving fitGauss method####
dividePt is: 49
sum1 is: 4837.03
 sum2 is: 594.969
 total is: 5432
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 25.9953
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
```

```
                result: 234.768
        _______Leaving computeVar method returning result_______
        sum is: 5015.51
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 53.3134
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 8.0457
        _______Leaving computeVar method returning result_______
        sum is: 593.995
####leaving fitGauss method####
dividePt is: 50
sum1 is: 5015.51
 sum2 is: 593.995
 total is: 5609.5
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 27.2204
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 250.693
        _______Leaving computeVar method returning result_______
        sum is: 5126.53
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 54.0654
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 6.81442
        _______Leaving computeVar method returning result_______
        sum is: 600.127
####leaving fitGauss method####
dividePt is: 51
sum1 is: 5126.53
 sum2 is: 600.127
 total is: 5726.65
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 28.1795
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 262.469
```

```
        _______Leaving computeVar method returning result_______
        sum is: 5183.67
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 54.7701
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 5.72742
        _______Leaving computeVar method returning result_______
        sum is: 589.731
####leaving fitGauss method####
dividePt is: 52
sum1 is: 5183.67
 sum2 is: 589.731
 total is: 5773.4
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 28.9755
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 272.026
        _______Leaving computeVar method returning result_______
        sum is: 5213.15
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 55.4499
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 4.7955
        _______Leaving computeVar method returning result_______
        sum is: 580.412
####leaving fitGauss method####
dividePt is: 53
sum1 is: 5213.15
 sum2 is: 580.412
 total is: 5793.56
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 29.6895
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 280.585
        _______Leaving computeVar method returning result_______
```

```
        sum is: 5215.88
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 56.1609
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 3.9314
        _______Leaving computeVar method returning result_______
        sum is: 588.739
####leaving fitGauss method####
dividePt is: 54
sum1 is: 5215.88
 sum2 is: 588.739
 total is: 5804.62
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 30.2667
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 287.622
        _______Leaving computeVar method returning result_______
        sum is: 5205.5
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 56.8339
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 3.2526
        _______Leaving computeVar method returning result_______
        sum is: 583.991
####leaving fitGauss method####
dividePt is: 55
sum1 is: 5205.5
 sum2 is: 583.991
 total is: 5789.49
 minSumDiff is: 1373.36
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 210
                result: 30.7778
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 294.058
        _______Leaving computeVar method returning result_______
        sum is: 5182.32
```

```
		####leaving fitGauss method####
		####Entering fitGauss method####
			%%%%Entering computeMean method%%%%
				maxHeight: 210
				result: 57.5359
			%%%%Leaving computeMean method maxHeight is an result%%%%%
			________Entering computeVar method________
				result: 2.72249
			________Leaving computeVar method returning result________
			sum is: 577.645
		####leaving fitGauss method####
		dividePt is: 56
		sum1 is: 5182.32
		 sum2 is: 577.645
		 total is: 5759.97
		 minSumDiff is: 1373.36
		 bestThr is: 32
minSumDiff: 1373.36
bestThr32
^^^^leaving biGaussian method, minSumDiff = bestThr is^^^^
```

Output2.txt

```
0 0:
1 1: +
2 3: +++
3 5: +++++
4 4: ++++
5 5: +++++
6 7: +++++++
7 4: ++++
8 6: ++++++
9 10: ++++++++++
10 12: ++++++++++++
11 15: +++++++++++++++
12 10: ++++++++++
13 14: ++++++++++++++
14 15: +++++++++++++++
15 22: ++++++++++++++++++++++
16 20: ++++++++++++++++++++
17 18: ++++++++++++++++++
18 28: ++++++++++++++++++++++++++++
19 38: ++++++++++++++++++++++++++++++++++++++
20 44: ++++++++++++++++++++++++++++++++++++++++++++
21 56: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++
22 70: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
23 90: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
24 120: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
25 150: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
26 190: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
27 214: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
28 190: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
29 172: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
30 132: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
31 100: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
32 89: +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
33 78: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
34 72: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
35 80: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
36 90: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
37 100: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
38 120: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
39 165: +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
40 186: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
41 195: +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
42 185: +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
43 170: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
44 165: +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
45 120: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
46 90: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
47 80: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
48 70: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
49 60: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
50 54: ++++++++++++++++++++++++++++++++++++++++++++++++++++++
51 35: +++++++++++++++++++++++++++++++++++
52 31: +++++++++++++++++++++++++++++++
53 21: +++++++++++++++++++++
54 19: +++++++++++++++++++
55 12: ++++++++++++
56 10: ++++++++++
57 9: +++++++++
58 11: +++++++++++
59 8: ++++++++
60 6: ++++++
```

the FIRST peak is (27, 214)
the SECOND peak is (41, 195)

deepestThrVal: 34
biGaussVal: 34

Debug2.txt

++++Entering deepestConcavity Method++++
maxGap: 132
thr: 34
++++leaving deepestConcavity method++++
^^^^Entering deepestConcavity Method^^^^
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 5
result: 2.92308
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 0.692308
_____Leaving computeVar method returning result_____
sum is: 358.623
####leaving fitGauss method####
####Entering fitGauss method####
%%%%Entering computeMean method%%%%
maxHeight: 214
result: 34.4991
%%%%Leaving computeMean method maxHeight is an result%%%%%
_____Entering computeVar method_____
result: 97.8342
_____Leaving computeVar method returning result_____
sum is: 7738.29
####leaving fitGauss method####
dividePt is: 5
sum1 is: 358.623
sum2 is: 7738.29
total is: 8096.92
minSumDiff is: 8096.92
bestThr is: 5

```
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 5
                result: 3.5
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 1.38889
        _______Leaving computeVar method returning result_______
        sum is: 699.717
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.5354
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 96.8853
        _______Leaving computeVar method returning result_______
        sum is: 7535.77
####leaving fitGauss method####
dividePt is: 6
sum1 is: 699.717
 sum2 is: 7535.77
 total is: 8235.49
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 7
                result: 4.2
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 2.24
        _______Leaving computeVar method returning result_______
        sum is: 1032.5
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.5845
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 95.6477
        _______Leaving computeVar method returning result_______
```

```
        sum is: 7334.02
####leaving fitGauss method####
dividePt is: 7
sum1 is: 1032.5
 sum2 is: 7334.02
 total is: 8366.52
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 7
                result: 4.58621
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 2.7931
        _______Leaving computeVar method returning result_______
        sum is: 1238.36
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.6117
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 94.9921
        _______Leaving computeVar method returning result_______
        sum is: 7130.78
####leaving fitGauss method####
dividePt is: 8
sum1 is: 1238.36
 sum2 is: 7130.78
 total is: 8369.14
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 7
                result: 5.17143
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 4
        _______Leaving computeVar method returning result_______
        sum is: 1543.26
####leaving fitGauss method####
```

```
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.651
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 94.0826
        _______Leaving computeVar method returning result_______
        sum is: 6928.41
####leaving fitGauss method####
dividePt is: 9
sum1 is: 1543.26
 sum2 is: 6928.41
 total is: 8471.68
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 10
                result: 6.02222
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 5.62222
        _______Leaving computeVar method returning result_______
        sum is: 1827.13
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.7145
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 92.6845
        _______Leaving computeVar method returning result_______
        sum is: 6728.34
####leaving fitGauss method####
dividePt is: 10
sum1 is: 1827.13
 sum2 is: 6728.34
 total is: 8555.47
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
```

```
                maxHeight: 12
                result: 6.85965
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 7.05263
        _______Leaving computeVar method returning result_______
        sum is: 2052.24
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.788
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 91.1386
        _______Leaving computeVar method returning result_______
        sum is: 6529.61
####leaving fitGauss method####
dividePt is: 11
sum1 is: 2052.24
 sum2 is: 6529.61
 total is: 8581.85
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 15
                result: 7.72222
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 8.43056
        _______Leaving computeVar method returning result_______
        sum is: 2265.02
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.8768
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 89.3581
        _______Leaving computeVar method returning result_______
        sum is: 6333
####leaving fitGauss method####
```

```
dividePt is: 12
sum1 is: 2265.02
 sum2 is: 6333
 total is: 8598.02
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 15
                result: 8.2439
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 9.34146
        _______Leaving computeVar method returning result_______
        sum is: 2458.64
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 34.9339
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 88.2722
        _______Leaving computeVar method returning result_______
        sum is: 6133.06
####leaving fitGauss method####
dividePt is: 13
sum1 is: 2458.64
 sum2 is: 6133.06
 total is: 8591.7
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 15
                result: 8.9375
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 10.8021
        _______Leaving computeVar method returning result_______
        sum is: 2667.31
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
```

```
                maxHeight: 214
                result: 35.0108
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 86.8893
        _______Leaving computeVar method returning result_______
        sum is: 5936.04
####leaving fitGauss method####
dividePt is: 14
sum1 is: 2667.31
 sum2 is: 5936.04
 total is: 8603.35
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 15
                result: 9.62162
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 12.3063
        _______Leaving computeVar method returning result_______
        sum is: 2866.55
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 35.09
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 85.5471
        _______Leaving computeVar method returning result_______
        sum is: 5739.88
####leaving fitGauss method####
dividePt is: 15
sum1 is: 2866.55
 sum2 is: 5739.88
 total is: 8606.42
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 22
                result: 10.5113
```

```
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 14.2707
        _______Leaving computeVar method returning result_______
        sum is: 3071.46
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 35.2017
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 83.7667
        _______Leaving computeVar method returning result_______
        sum is: 5549.37
####leaving fitGauss method####
dividePt is: 16
sum1 is: 3071.46
 sum2 is: 5549.37
 total is: 8620.82
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 22
                result: 11.2288
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 15.817
        _______Leaving computeVar method returning result_______
        sum is: 3268.62
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 35.2992
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 82.3096
        _______Leaving computeVar method returning result_______
        sum is: 5357.44
####leaving fitGauss method####
dividePt is: 17
sum1 is: 3268.62
```

```
 sum2 is: 5357.44
 total is: 8626.05
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 22
                result: 11.8363
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 17.2924
        _______Leaving computeVar method returning result_______
        sum is: 3455.82
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 35.3833
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 81.1421
        _______Leaving computeVar method returning result_______
        sum is: 5163.96
####leaving fitGauss method####
dividePt is: 18
sum1 is: 3455.82
 sum2 is: 5163.96
 total is: 8619.78
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 28
                result: 12.7035
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 19.4523
        _______Leaving computeVar method returning result_______
        sum is: 3638.68
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 35.5084
```

```
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 79.5359
        _______Leaving computeVar method returning result_______
        sum is: 4979.23
####leaving fitGauss method####
dividePt is: 19
sum1 is: 3638.68
 sum2 is: 4979.23
 total is: 8617.91
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 38
                result: 13.7131
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 21.6709
        _______Leaving computeVar method returning result_______
        sum is: 3810.09
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 35.6712
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 77.6071
        _______Leaving computeVar method returning result_______
        sum is: 4803.57
####leaving fitGauss method####
dividePt is: 20
sum1 is: 3810.09
 sum2 is: 4803.57
 total is: 8613.67
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 44
                result: 14.6975
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
```

```
                result: 23.4982
        _______Leaving computeVar method returning result_______
        sum is: 3962.06
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 35.8522
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 75.6327
        _______Leaving computeVar method returning result_______
        sum is: 4633.66
####leaving fitGauss method####
dividePt is: 21
sum1 is: 3962.06
 sum2 is: 4633.66
 total is: 8595.72
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 56
                result: 15.7448
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 25.089
        _______Leaving computeVar method returning result_______
        sum is: 4093.89
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 36.0738
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 73.4223
        _______Leaving computeVar method returning result_______
        sum is: 4475.12
####leaving fitGauss method####
dividePt is: 22
sum1 is: 4093.89
 sum2 is: 4475.12
 total is: 8569
```

```
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 70
                result: 16.8206
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 26.344
        _______Leaving computeVar method returning result_______
        sum is: 4198.97
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 36.3413
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 70.9807
        _______Leaving computeVar method returning result_______
        sum is: 4329.98
####leaving fitGauss method####
dividePt is: 23
sum1 is: 4198.97
 sum2 is: 4329.98
 total is: 8528.95
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 90
                result: 17.9396
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.2354
        _______Leaving computeVar method returning result_______
        sum is: 4265.7
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 36.6755
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
```

```
                result: 68.1898
        _______Leaving computeVar method returning result_______
        sum is: 4204.05
####leaving fitGauss method####
dividePt is: 24
sum1 is: 4265.7
 sum2 is: 4204.05
 total is: 8469.75
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 120
                result: 19.1183
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.6953
        _______Leaving computeVar method returning result_______
        sum is: 4290.45
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 37.1134
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 64.8028
        _______Leaving computeVar method returning result_______
        sum is: 4106.76
####leaving fitGauss method####
dividePt is: 25
sum1 is: 4290.45
 sum2 is: 4106.76
 total is: 8397.21
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 150
                result: 20.2686
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.7197
        _______Leaving computeVar method returning result_______
```

```
        sum is: 4263.28
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 37.6602
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 60.805
        _______Leaving computeVar method returning result_______
        sum is: 4037.82
####leaving fitGauss method####
dividePt is: 26
sum1 is: 4263.28
 sum2 is: 4037.82
 total is: 8301.1
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 190
                result: 21.4065
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.442
        _______Leaving computeVar method returning result_______
        sum is: 4207.85
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 38.3674
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 55.7475
        _______Leaving computeVar method returning result_______
        sum is: 4005.31
####leaving fitGauss method####
dividePt is: 27
sum1 is: 4207.85
 sum2 is: 4005.31
 total is: 8213.16
 minSumDiff is: 8096.92
 bestThr is: 5
```

```
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 22.4287
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.0999
        _______Leaving computeVar method returning result_______
        sum is: 4161.02
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 39.2008
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 49.6667
        _______Leaving computeVar method returning result_______
        sum is: 3978.2
####leaving fitGauss method####
dividePt is: 28
sum1 is: 4161.02
 sum2 is: 3978.2
 total is: 8139.23
 minSumDiff is: 8096.92
 bestThr is: 5
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 23.2065
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.0434
        _______Leaving computeVar method returning result_______
        sum is: 4150.1
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 39.9806
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 43.7809
        _______Leaving computeVar method returning result_______
```

```
        sum is: 3929.67
####leaving fitGauss method####
dividePt is: 29
sum1 is: 4150.1
 sum2 is: 3929.67
 total is: 8079.76
 minSumDiff is: 8079.76
 bestThr is: 29
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 23.8565
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.3542
        _______Leaving computeVar method returning result_______
        sum is: 4197.93
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 40.7192
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 38.0712
        _______Leaving computeVar method returning result_______
        sum is: 3853.88
####leaving fitGauss method####
dividePt is: 30
sum1 is: 4197.93
 sum2 is: 3853.88
 total is: 8051.81
 minSumDiff is: 8051.81
 bestThr is: 30
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 24.3435
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.9393
        _______Leaving computeVar method returning result_______
        sum is: 4297.44
####leaving fitGauss method####
```

```
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 41.3027
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 33.5472
        _______Leaving computeVar method returning result_______
        sum is: 3736.25
####leaving fitGauss method####
dividePt is: 31
sum1 is: 4297.44
 sum2 is: 3736.25
 total is: 8033.69
 minSumDiff is: 8033.69
 bestThr is: 31
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 24.7207
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 28.7235
        _______Leaving computeVar method returning result_______
        sum is: 4421.56
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 41.7458
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 30.2305
        _______Leaving computeVar method returning result_______
        sum is: 3590.75
####leaving fitGauss method####
dividePt is: 32
sum1 is: 4421.56
 sum2 is: 3590.75
 total is: 8012.31
 minSumDiff is: 8012.31
 bestThr is: 32
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
```

```
                maxHeight: 214
                result: 25.0701
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 29.7675
        _______Leaving computeVar method returning result_______
        sum is: 4566.67
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 42.1337
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 27.5027
        _______Leaving computeVar method returning result_______
        sum is: 3435.3
####leaving fitGauss method####
dividePt is: 33
sum1 is: 4566.67
 sum2 is: 3435.3
 total is: 8001.97
 minSumDiff is: 8001.97
 bestThr is: 33
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 25.3903
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 31.0005
        _______Leaving computeVar method returning result_______
        sum is: 4724.19
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 42.4639
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 25.3726
        _______Leaving computeVar method returning result_______
        sum is: 3273.31
####leaving fitGauss method####
```

```
dividePt is: 34
sum1 is: 4724.19
 sum2 is: 3273.31
 total is: 7997.49
 minSumDiff is: 7997.49
 bestThr is: 34
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 25.6996
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 32.4541
        _______Leaving computeVar method returning result_______
        sum is: 4878.94
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 42.756
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 23.6908
        _______Leaving computeVar method returning result_______
        sum is: 3110.18
####leaving fitGauss method####
dividePt is: 35
sum1 is: 4878.94
 sum2 is: 3110.18
 total is: 7989.12
 minSumDiff is: 7989.12
 bestThr is: 35
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 26.0566
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 34.4002
        _______Leaving computeVar method returning result_______
        sum is: 5032.48
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
```

```
                maxHeight: 195
                result: 43.0653
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 22.1401
        _______Leaving computeVar method returning result_______
        sum is: 2955.16
####leaving fitGauss method####
dividePt is: 36
sum1 is: 5032.48
 sum2 is: 2955.16
 total is: 7987.65
 minSumDiff is: 7987.65
 bestThr is: 36
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 26.4683
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 36.9002
        _______Leaving computeVar method returning result_______
        sum is: 5183
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 43.3972
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 20.7265
        _______Leaving computeVar method returning result_______
        sum is: 2811.44
####leaving fitGauss method####
dividePt is: 37
sum1 is: 5183
 sum2 is: 2811.44
 total is: 7994.44
 minSumDiff is: 7987.65
 bestThr is: 36
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 26.9314
```

```
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 39.9411
        _______Leaving computeVar method returning result_______
        sum is: 5316.92
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 43.7494
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 19.4895
        _______Leaving computeVar method returning result_______
        sum is: 2681.42
####leaving fitGauss method####
dividePt is: 38
sum1 is: 5316.92
 sum2 is: 2681.42
 total is: 7998.34
 minSumDiff is: 7987.65
 bestThr is: 36
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 27.4862
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 43.7711
        _______Leaving computeVar method returning result_______
        sum is: 5409.36
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 44.1562
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 18.3662
        _______Leaving computeVar method returning result_______
        sum is: 2575.99
####leaving fitGauss method####
dividePt is: 39
sum1 is: 5409.36
```

```
 sum2 is: 2575.99
 total is: 7985.35
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 28.2286
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 48.9453
        _______Leaving computeVar method returning result_______
        sum is: 5485.31
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 44.712
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 17.1705
        _______Leaving computeVar method returning result_______
        sum is: 2519.25
####leaving fitGauss method####
dividePt is: 40
sum1 is: 5485.31
 sum2 is: 2519.25
 total is: 8004.57
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 29.0262
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 54.3821
        _______Leaving computeVar method returning result_______
        sum is: 5542.42
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 195
                result: 45.3636
```

```
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 16.0498
        _______Leaving computeVar method returning result_______
        sum is: 2491.44
####leaving fitGauss method####
dividePt is: 41
sum1 is: 5542.42
 sum2 is: 2491.44
 total is: 8033.86
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 29.8204
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 59.6534
        _______Leaving computeVar method returning result_______
        sum is: 5599.54
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 185
                result: 46.1035
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 14.9957
        _______Leaving computeVar method returning result_______
        sum is: 2480.86
####leaving fitGauss method####
dividePt is: 42
sum1 is: 5599.54
 sum2 is: 2480.86
 total is: 8080.4
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 30.5414
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
```

```
                result: 64.3834
        _______Leaving computeVar method returning result_______
        sum is: 5663.27
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 170
                result: 46.8902
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 14.0249
        _______Leaving computeVar method returning result_______
        sum is: 2467.29
####leaving fitGauss method####
dividePt is: 43
sum1 is: 5663.27
 sum2 is: 2467.29
 total is: 8130.55
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 31.1842
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 68.658
        _______Leaving computeVar method returning result_______
        sum is: 5726.92
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 165
                result: 47.722
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 13.0969
        _______Leaving computeVar method returning result_______
        sum is: 2443.91
####leaving fitGauss method####
dividePt is: 44
sum1 is: 5726.92
 sum2 is: 2443.91
 total is: 8170.83
```

```
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 31.7954
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 72.8413
        _______Leaving computeVar method returning result_______
        sum is: 5833.33
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 120
                result: 48.6968
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 11.9476
        _______Leaving computeVar method returning result_______
        sum is: 2413.48
####leaving fitGauss method####
dividePt is: 45
sum1 is: 5833.33
 sum2 is: 2413.48
 total is: 8246.81
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 32.238
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 76.0489
        _______Leaving computeVar method returning result_______
        sum is: 5965.17
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 90
                result: 49.5667
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
```

```
                result: 10.7882
        _______Leaving computeVar method returning result_______
        sum is: 2328.95
####leaving fitGauss method####
dividePt is: 46
sum1 is: 5965.17
 sum2 is: 2328.95
 total is: 8294.12
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 32.5755
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 78.7144
        _______Leaving computeVar method returning result_______
        sum is: 6104.78
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 80
                result: 50.331
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 9.79048
        _______Leaving computeVar method returning result_______
        sum is: 2215.12
####leaving fitGauss method####
dividePt is: 47
sum1 is: 6104.78
 sum2 is: 2215.12
 total is: 8319.89
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 32.8832
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 81.3781
        _______Leaving computeVar method returning result_______
```

```
        sum is: 6254.14
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 70
                result: 51.1147
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 8.87647
        _______Leaving computeVar method returning result_______
        sum is: 2097.14
####leaving fitGauss method####
dividePt is: 48
sum1 is: 6254.14
 sum2 is: 2097.14
 total is: 8351.28
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 33.1602
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 83.9982
        _______Leaving computeVar method returning result_______
        sum is: 6413.09
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 60
                result: 51.9222
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 8.01111
        _______Leaving computeVar method returning result_______
        sum is: 1973.6
####leaving fitGauss method####
dividePt is: 49
sum1 is: 6413.09
 sum2 is: 1973.6
 total is: 8386.7
 minSumDiff is: 7985.35
 bestThr is: 39
```

```
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 33.4052
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 86.5175
        _______Leaving computeVar method returning result_______
        sum is: 6577.42
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 54
                result: 52.7571
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 7.16667
        _______Leaving computeVar method returning result_______
        sum is: 1843.05
####leaving fitGauss method####
dividePt is: 50
sum1 is: 6577.42
 sum2 is: 1843.05
 total is: 8420.47
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 33.6329
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 89.0592
        _______Leaving computeVar method returning result_______
        sum is: 6760.52
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 35
                result: 53.7115
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 6.09615
        _______Leaving computeVar method returning result_______
```

```
        sum is: 1697.31
####leaving fitGauss method####
dividePt is: 51
sum1 is: 6760.52
 sum2 is: 1697.31
 total is: 8457.83
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 33.7861
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 90.9095
        _______Leaving computeVar method returning result_______
        sum is: 6945.13
####leaving fitGauss method####
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 31
                result: 54.4959
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 5.13223
        _______Leaving computeVar method returning result_______
        sum is: 1524.71
####leaving fitGauss method####
dividePt is: 52
sum1 is: 6945.13
 sum2 is: 1524.71
 total is: 8469.84
 minSumDiff is: 7985.35
 bestThr is: 39
####Entering fitGauss method####
        %%%%Entering computeMean method%%%%
                maxHeight: 214
                result: 33.9273
        %%%%Leaving computeMean method maxHeight is an result%%%%%
        _______Entering computeVar method_______
                result: 92.7565
        _______Leaving computeVar method returning result_______
        sum is: 7139.5
####leaving fitGauss method####
```

```
        ####Entering fitGauss method####
                %%%%Entering computeMean method%%%%
                        maxHeight: 21
                        result: 55.3556
                %%%%Leaving computeMean method maxHeight is an result%%%%%
                _______Entering computeVar method_______
                        result: 4.01111
                _______Leaving computeVar method returning result_______
                sum is: 1330.69
        ####leaving fitGauss method####
        dividePt is: 53
        sum1 is: 7139.5
         sum2 is: 1330.69
         total is: 8470.19
         minSumDiff is: 7985.35
         bestThr is: 39
        ####Entering fitGauss method####
                %%%%Entering computeMean method%%%%
                        maxHeight: 214
                        result: 34.0269
                %%%%Leaving computeMean method maxHeight is an result%%%%%
                _______Entering computeVar method_______
                        result: 94.1624
                _______Leaving computeVar method returning result_______
                sum is: 7334.21
        ####leaving fitGauss method####
        ####Entering fitGauss method####
                %%%%Entering computeMean method%%%%
                        maxHeight: 19
                        result: 56.0725
                %%%%Leaving computeMean method maxHeight is an result%%%%%
                _______Entering computeVar method_______
                        result: 3.02899
                _______Leaving computeVar method returning result_______
                sum is: 1114.72
        ####leaving fitGauss method####
        dividePt is: 54
        sum1 is: 7334.21
         sum2 is: 1114.72
         total is: 8448.93
         minSumDiff is: 7985.35
         bestThr is: 39
minSumDiff: 7985.35
bestThr39
```

^^^^leaving biGaussian method, minSumDiff = bestThr is^^^^

main.cpp

```
#include <iostream>
#include <fstream>
#include <cmath>
using namespace std;


class thresholdSelection{
public:
   int numRows, numCols, minVal, maxVal, x1, y1, x2, y2, *histAry, deepestThrVal, BiGaussThrVal, *GaussAry;

   thresholdSelection(int r, int c, int min, int max, int *arr){
      this->numRows = r;
      this->numCols = c;
      this->minVal = min;
      this->maxVal = max;
      this->histAry = arr;
      this->GaussAry = new int[maxVal +1];
   }


   int loadHist(ifstream &input){

      int index, val, max = 0;

      while(!input.eof()){
         input >> index >> val;
```

```
        this->histAry[index] = val;
        if(max<histAry[index]){
            max = histAry[index];
        }
    }

    return max;
}

void dispHist(ofstream *output){

    for (int i = 0; i < maxVal +1 ; i++){

        *output<<i<<" "<< histAry[i]<<": ";
        for (int j = 0; j < histAry[i]; j++){
            *output << "+";
        }

        *output << endl;

    }

}

void setZero(int arr[], int size){
    // cout<<size;
    for(int i = 0; i < size; i++){
        arr[i] = 0;
    }
}

int deepestConcavity(int x1, int y1, int x2, int y2, ofstream *output){
    *output << "++++Entering deepestConcavity Method++++"<<endl;
    double m = (double) (y2-y1) / (double) (x2-x1);
    double b = (double) y1 -(m*(double) x1);

    int maxGap = 0;
```

```
    int first = x1;
    int second = x2;

    int x = first;
    int thr = first;

    while (x<=second){
        //step 1
        int y = (int) (m*x +b);
        //step 3 she misnumbered
        int gap = (abs) (histAry[x]-y);
        //step 4
        if (gap > maxGap){
            maxGap = gap;
            thr = x;
        }
        //step 5
        x++;
    }



    *output <<"\tmaxGap: "<<maxGap<<endl;
    *output <<"\tthr: "<<thr<<endl;
     *output << "++++leaving deepestConcavity method++++"<<endl;

    return thr;

}

double computeMean(int leftIndex, int rightIndex, int maxHeight, ofstream *output){

    *output<<"\t\t%%%%Entering computeMean method%%%%"<<endl;

    maxHeight = 0;
    int sum = 0,
        numPixels = 0;
```

```
    //Step1
    int index = leftIndex;

    //step 5
    while (index <rightIndex){
        //step2
        sum +=(histAry[index] *index);
        numPixels +=histAry[index];
        //step 3
        if (histAry[index] > maxHeight){
            maxHeight = histAry[index];
        }
        //step 4
        index++;
    }

    //step 6
    double result = (double) sum / (double) numPixels;

    // step 7

    *output <<"\t\t\tmaxHeight: "<<maxHeight<<endl;
    *output <<"\t\t\tresult: " << result <<endl;
    *output << "\t\t%%%%Leaving computeMean method maxHeight is an result%%%%%"<<endl;
    return result;

}

double computeVar(int leftIndex, int rightIndex, double mean, ofstream *output){
    *output << "\t\t_______Entering computeVar method_______"<<endl;

    int sum = 0,
        numPixels = 0;

    int index = leftIndex;

    //step 4
```

```
    while (index <rightIndex){
        //step 2
        sum+=(double) histAry[index] * pow((double) index - mean,2);

            //((double) index - mean)
            //pow(x-mean,2)

        numPixels +=histAry[index];

        //step 3
        index++;
    }

    //step 5
    double result = sum / (double) numPixels;
    *output << "\t\t\tresult: " << result << endl;
    *output << "\t\t_______Leaving computeVar method returning result_______" << endl;
    return result;

}


double modifiedGauss(int x, double mean, double var, int maxHeight){

    // return (double)(maxHeight * exp)
    //g(x) = a* exp (- ((x-b)^2)/(2*c2)))
    /*
        a = max height
        b = mean
        c2 = var
    **/
   return maxHeight * exp( - ((pow(x-mean,2)/(2*var*var))));


    // return 2.0;
}
```

```
double fitGauss(int leftIndex, int rightIndex, int maxHeight, ofstream *output){
    *output << "\t####Entering fitGauss method####"<<endl;

    double mean,
        var,
        sum = 0.0,
        Gval,
        maxGval;

    //step 1
    mean = computeMean(leftIndex, rightIndex, maxHeight, output);
    var = computeVar(leftIndex, rightIndex, mean, output);

    //step 2
    int index = leftIndex;

    while (index<=rightIndex){
        // step 3
        Gval = modifiedGauss(index, mean, var, maxHeight);
        // step 4
        sum += abs(Gval - (double)histAry[index]);
        //step 5
        GaussAry[index] = (int) Gval;
        //step 6
        index ++;
    }

    *output << "\t\tsum is: " << sum << endl;
    *output << "\t####leaving fitGauss method####"<<endl;

    return sum;
}

int biGauss(int maxHeight, int minVal, int maxVal, ofstream *output){

    //step 0
    *output << "^^^^Entering deepestConcavity Method^^^^"<<endl;
```

```
    double sum1, sum2, total, minSumDiff;
    int offSet = (int) (maxVal - minVal)/10,
        dividePt = offSet,
        bestThr = dividePt;
        minSumDiff = 999999.0;



    while (dividePt < maxVal - offSet){

        // step 1
        setZero(GaussAry, maxVal);
        // step 2
        sum1 = fitGauss(1, dividePt, maxHeight, output);
        //step 3
        sum2 = fitGauss(dividePt, maxVal, maxHeight, output);
        //step 4
        total = sum1 + sum2;
        //step 5
        if (total < minSumDiff){
        minSumDiff = total;
        bestThr = dividePt;
        }
        //step 6
        *output << "\tdividePt is: " << dividePt << endl;
        *output << "\tsum1 is: " << sum1 << endl;
        *output << "\t sum2 is: " << sum2 << endl;
        *output << "\t total is: " << total << endl;
        *output << "\t minSumDiff is: " << minSumDiff << endl;
        *output << "\t bestThr is: " << bestThr << endl;

        //STEP 7
        dividePt ++;
    }


    *output << "minSumDiff: " << minSumDiff<< endl;
```

```
        *output << "bestThr" <<bestThr << endl;
        *output << "^^^^leaving biGaussian method, minSumDiff = bestThr is^^^^"<<endl;

        return bestThr;


    }

};

int main(int argc, char *argv[]){


    ifstream input1, input2;
    input1.open(argv[1]);
    input2.open(argv[2]);

    ofstream output, debug;
    output.open(argv[3]);
    debug.open(argv[4]);

    int numRows, numCols, minVal, maxVal;
    input1 >> numRows >> numCols>>minVal>>maxVal;

    int x1, y1, x2, y2;
    input2 >> x1>> y1>> x2>> y2;

    int *histAry = new int[maxVal+1];

    for (int i=0;i<maxVal+1; i++){
       histAry[i]=0;
    }

    thresholdSelection *proj1 = new thresholdSelection(numRows, numCols, minVal, maxVal, histAry);

    int maxHeight = proj1->loadHist(input1);
```

```
    //step 2
    proj1->dispHist(&output);

    output << endl << "the FIRST peak is " << x1 << ", " << y1 <<endl;
    output << "the SECOND peak is " << x2 << ", " << y2 <<endl <<endl;

    //step 3
    int deepestThrVal = proj1->deepestConcavity(x1, y1, x2, y2, &debug);
    output << "deepestThrVal: " << deepestThrVal <<endl;

    //step 4
    int biGaussVal = proj1->biGauss(maxHeight, minVal, maxVal, &debug);

    output << "biGaussVal: " << biGaussVal << endl;




    input1.close();
    input2.close();
    output.close();
    debug.close();







    return 0;
}
```