



Tratamiento de Señales

Version 2022-I

Ecualización de Histogramas

[Capítulo 3]

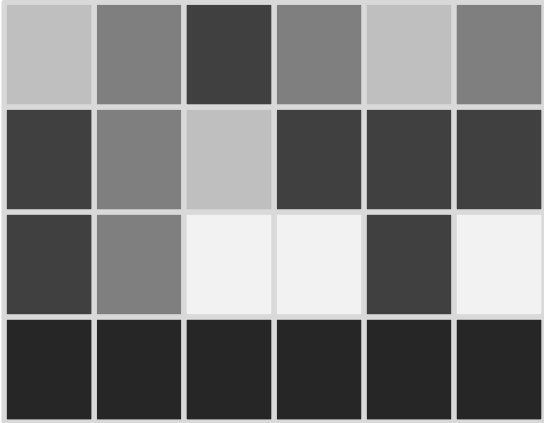
Dr. José Ramón Iglesias

DSP-ASIC BUILDER GROUP

Director Semillero TRIAC

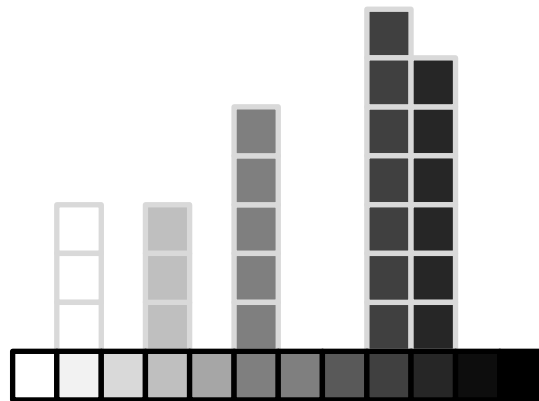
Ingeniería Electronica

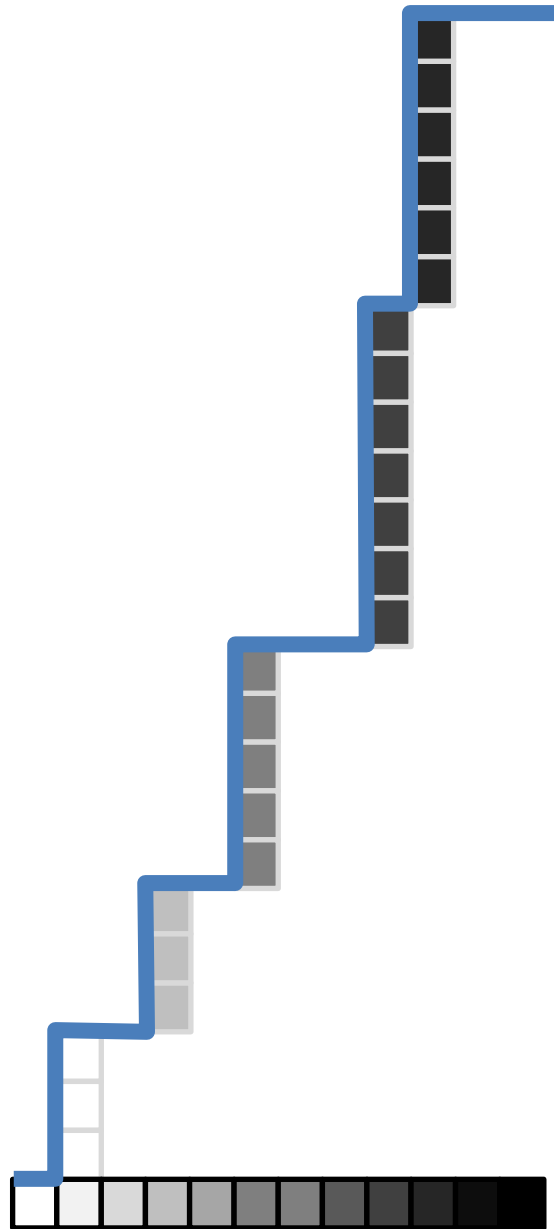
Universidad Popular del Cesar

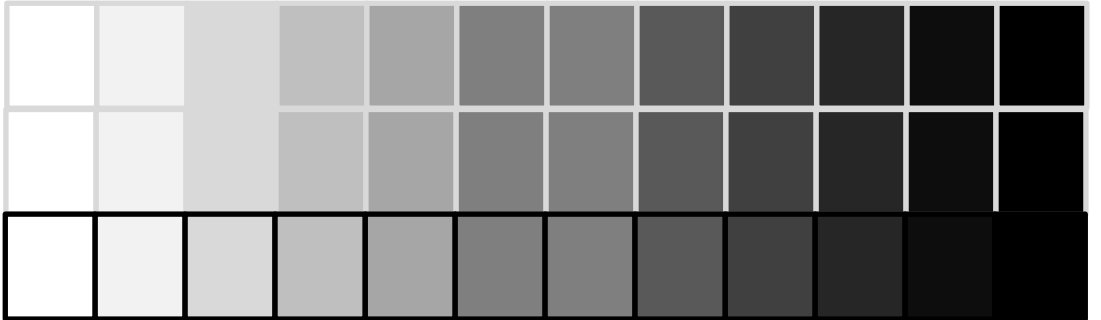
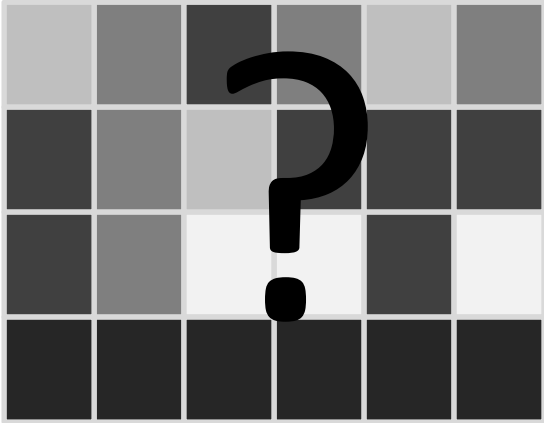


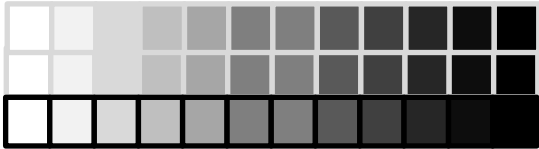
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9	6	2	2	9	2
10	10	10	10	10	10

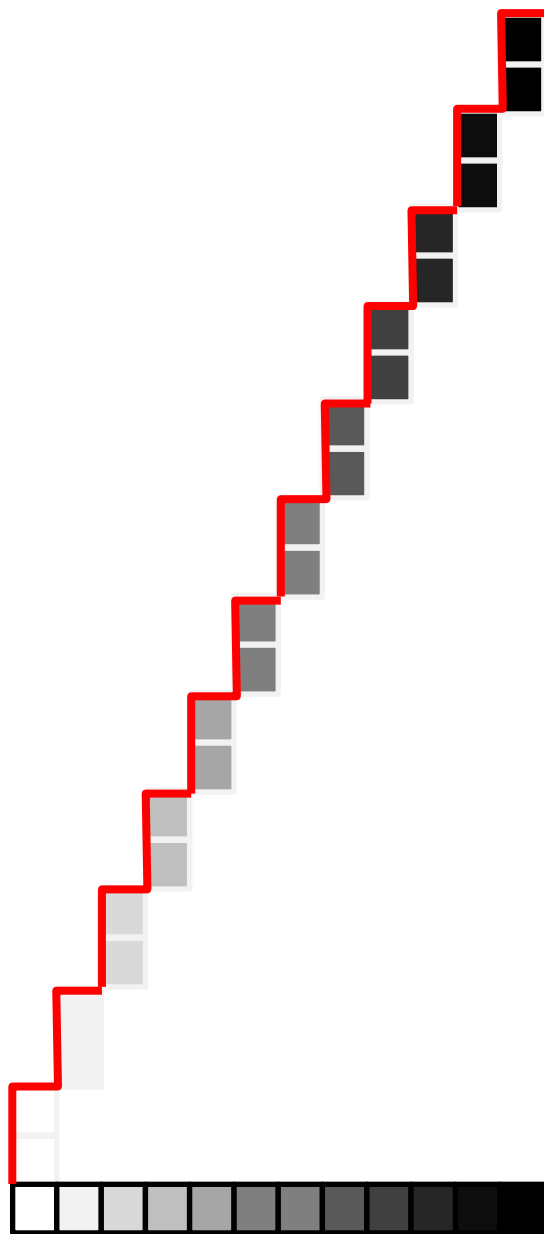


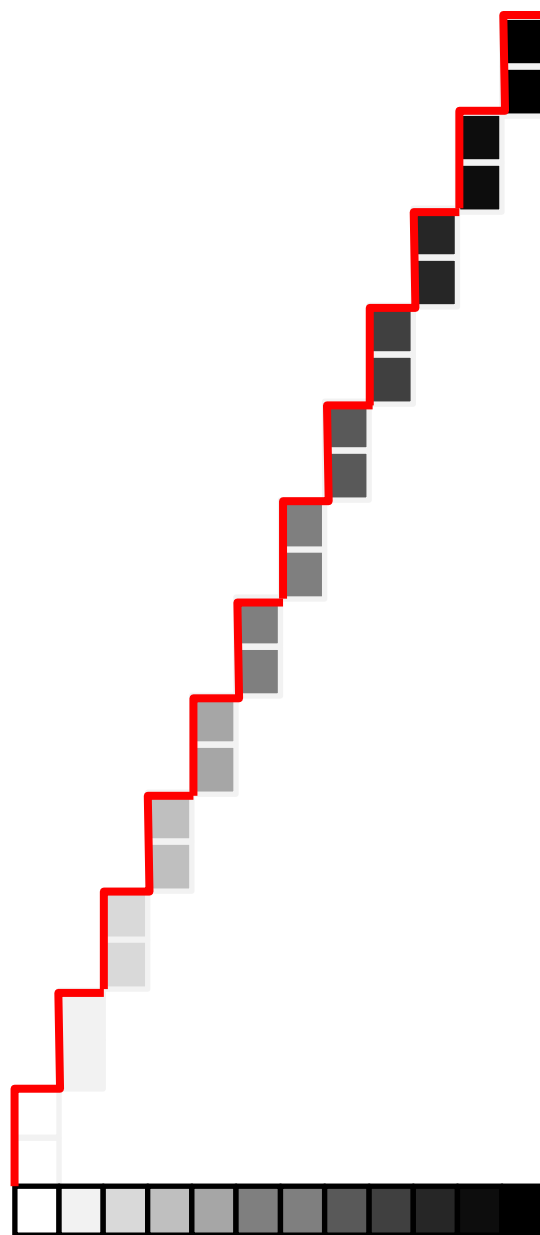
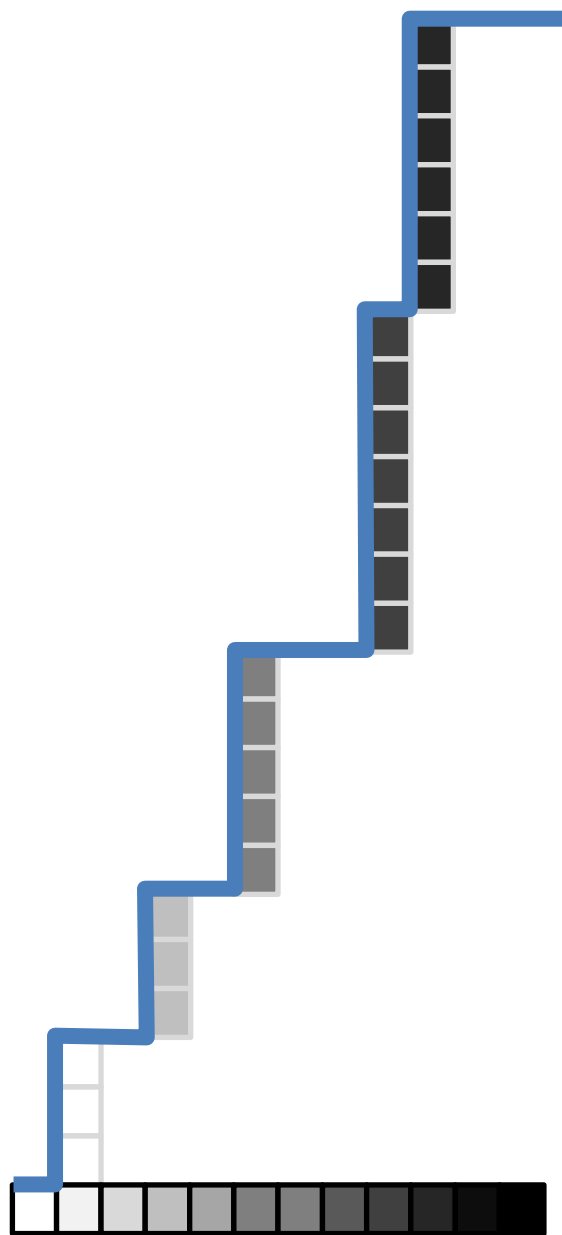


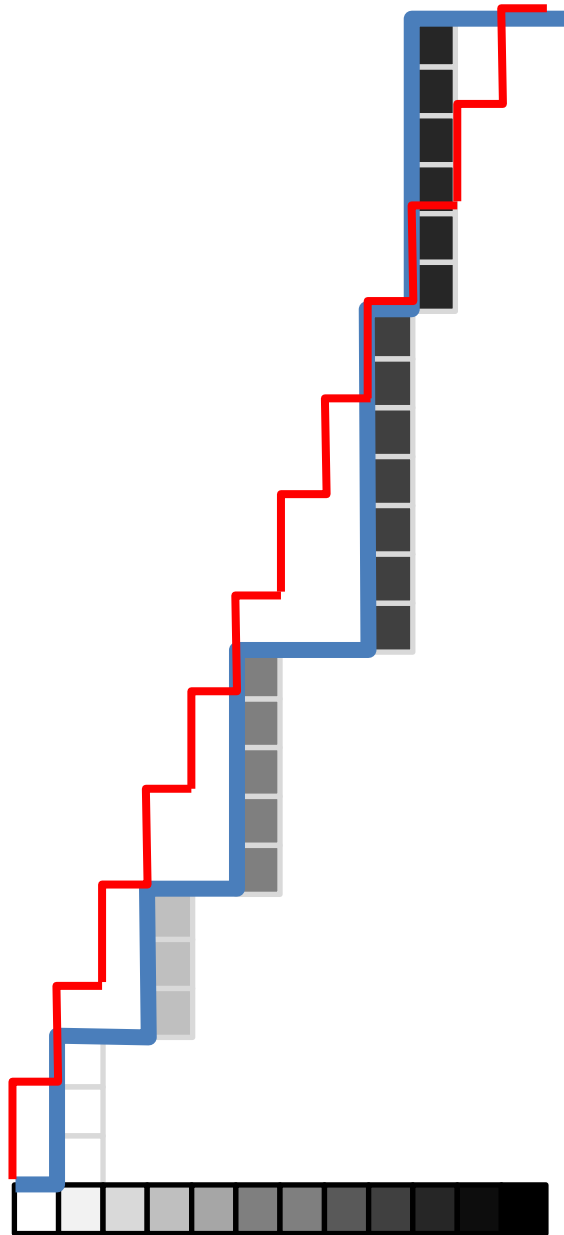




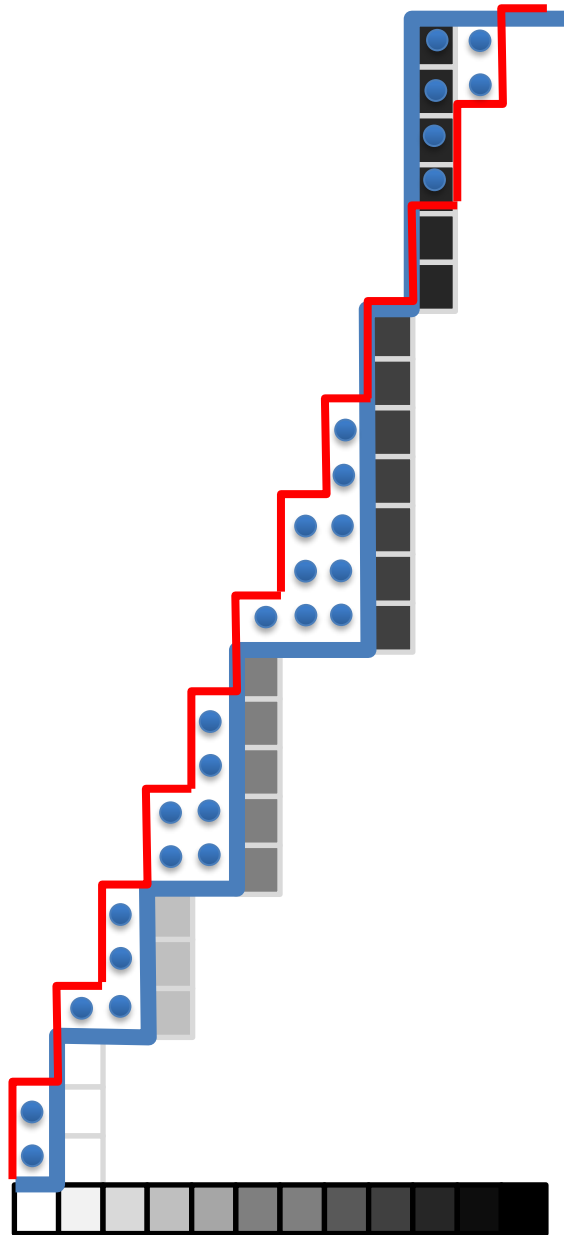






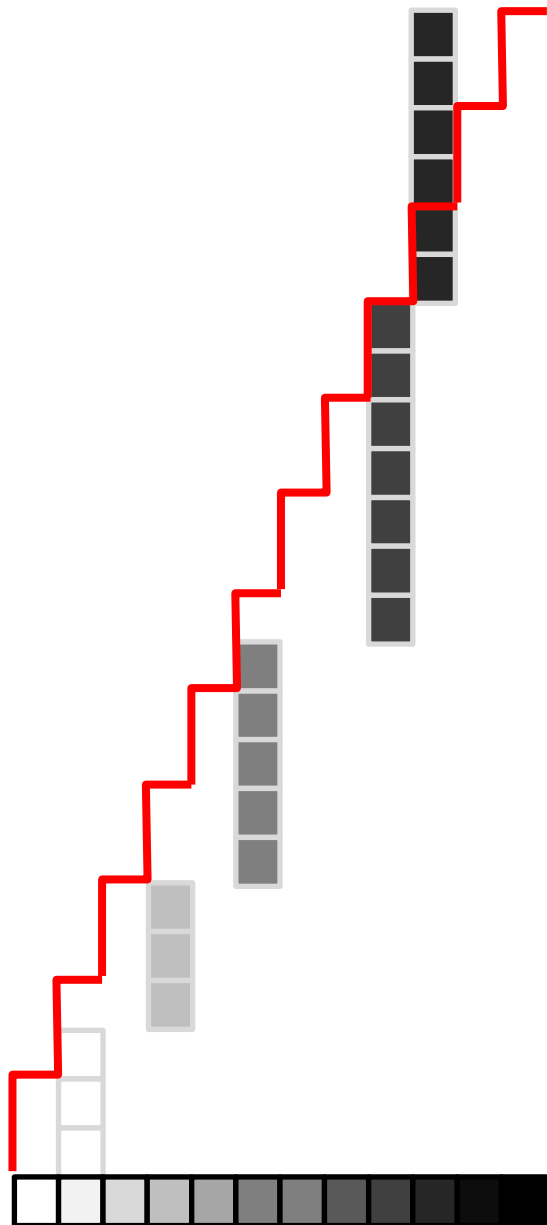


How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

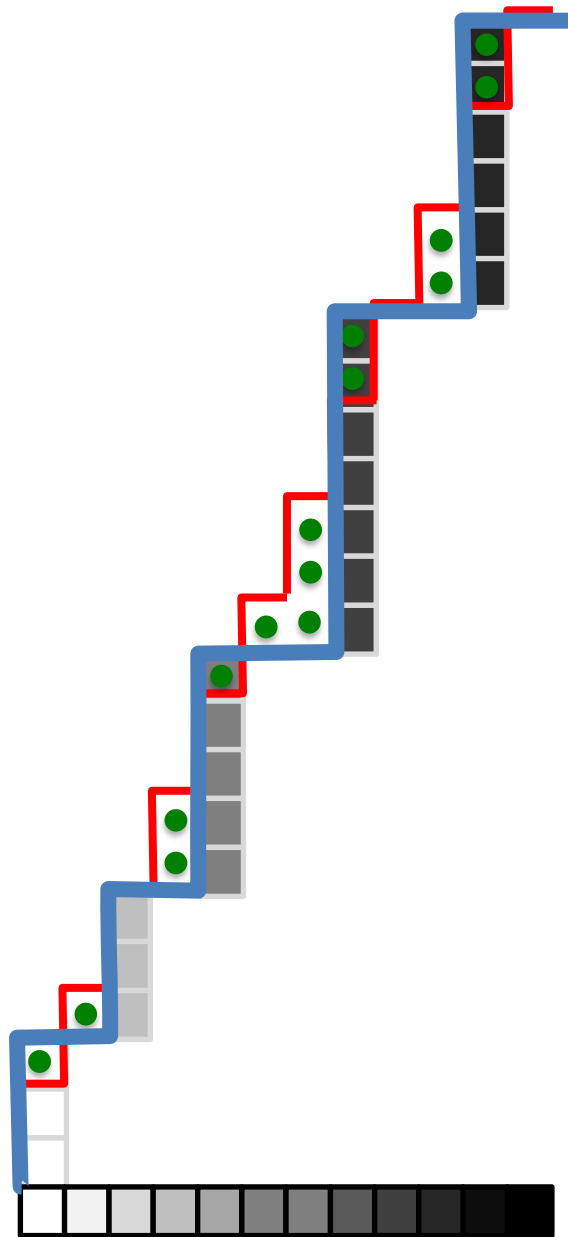


How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 27 (circles)

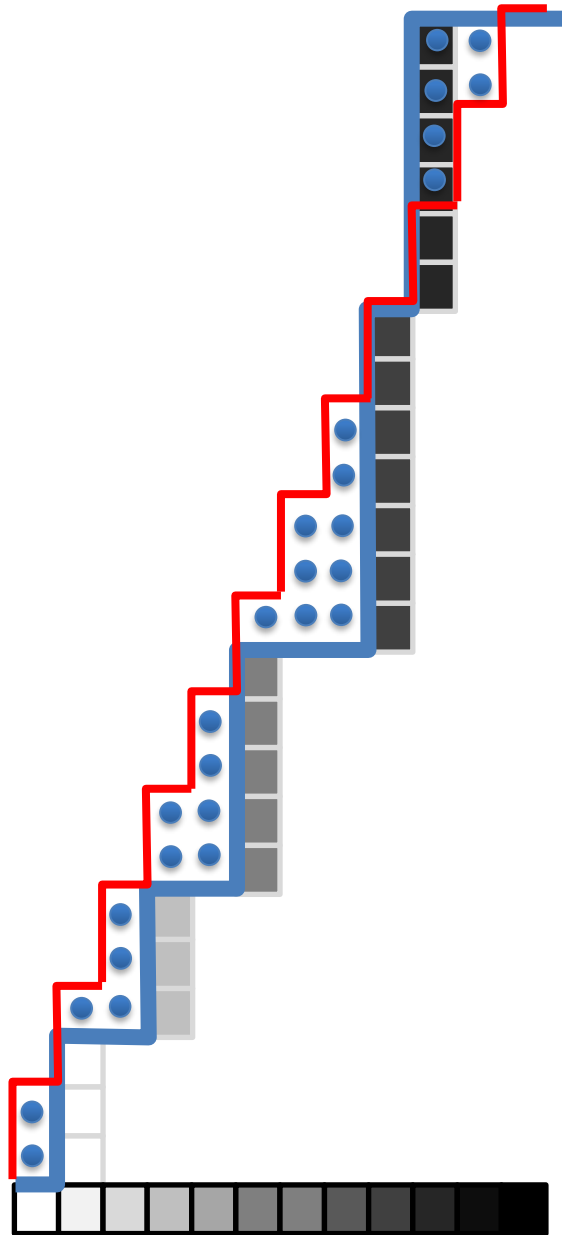


How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?



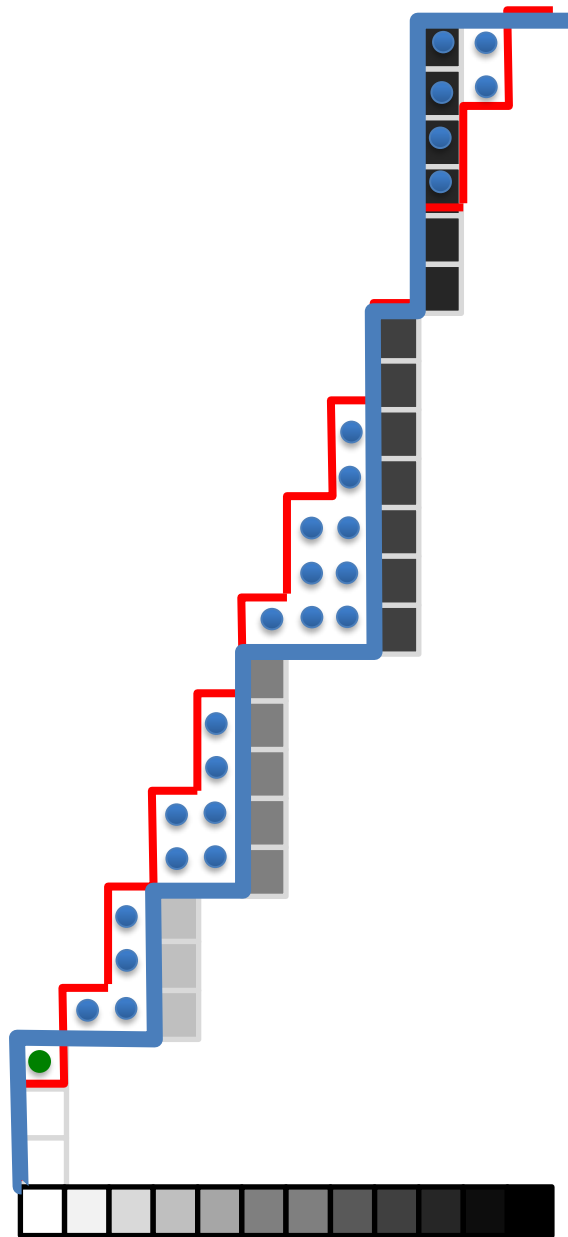
How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 15



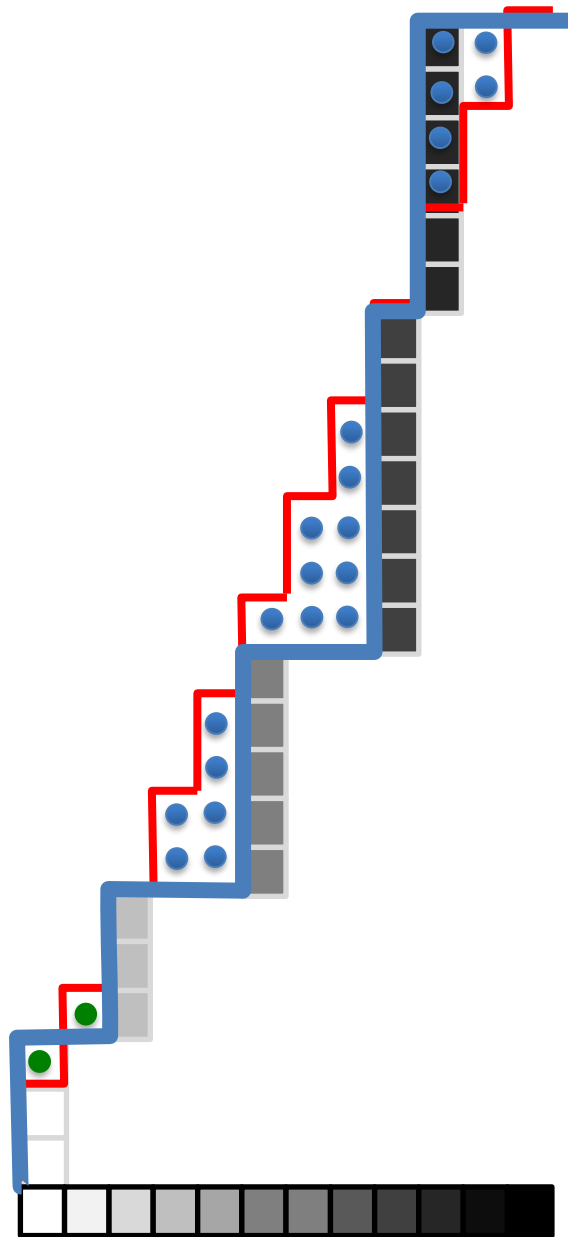
How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 27 (circles)



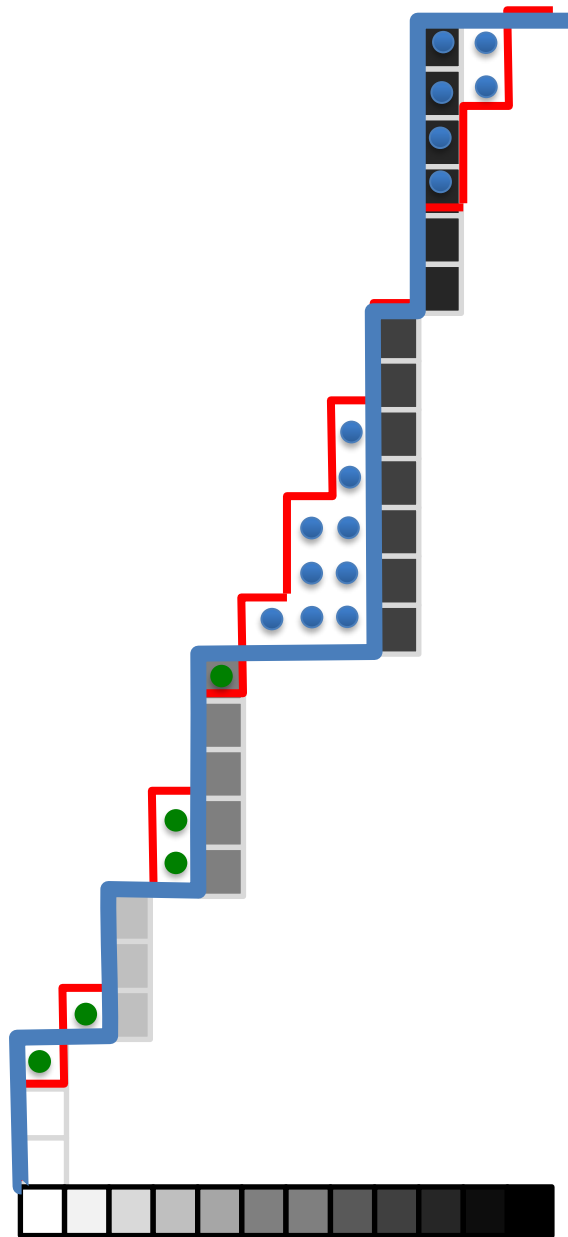
How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 26 (circles)



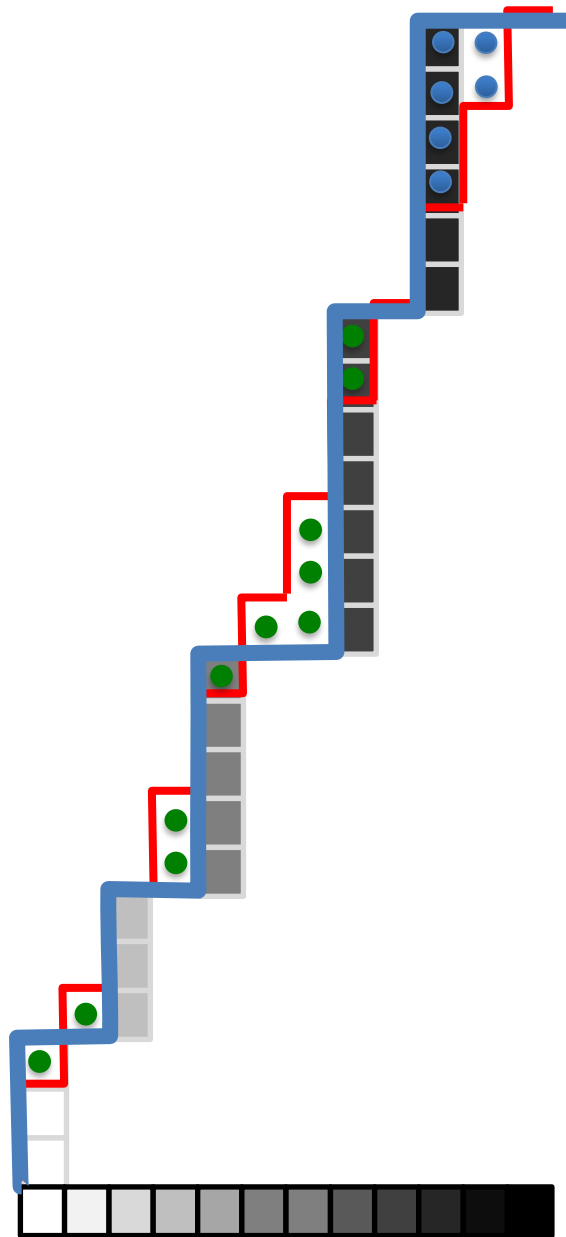
How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 23



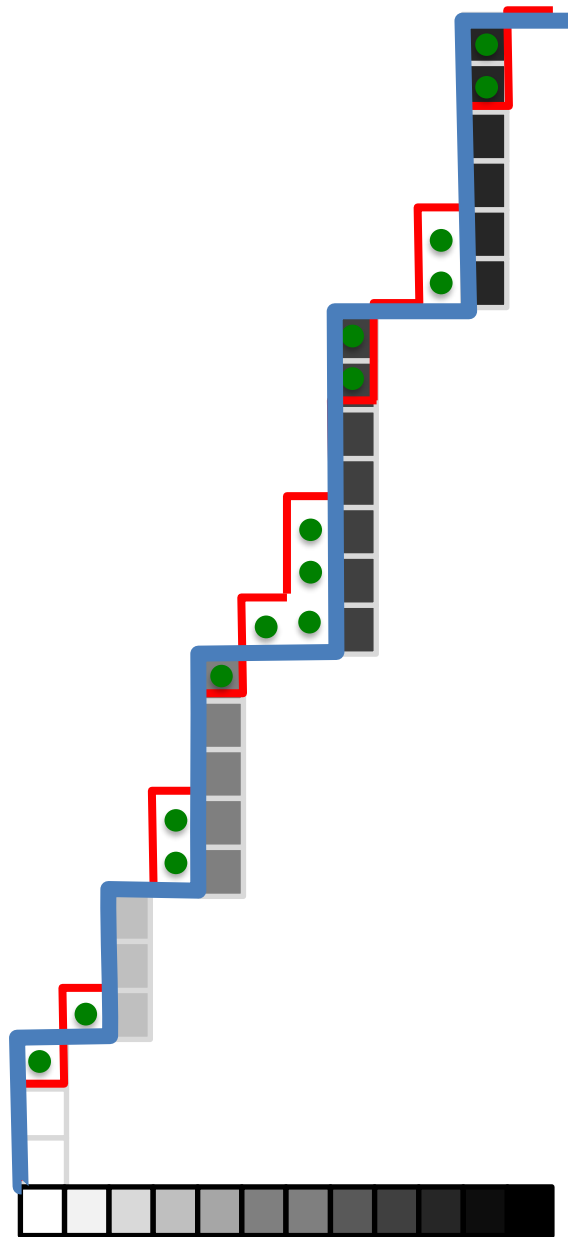
How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 20



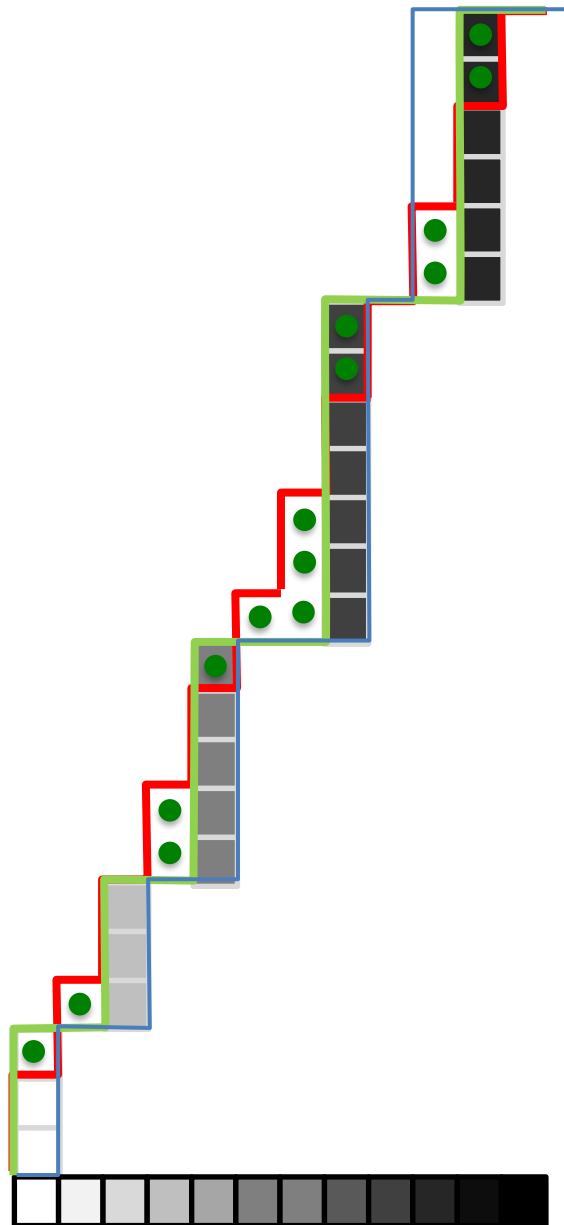
How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 17



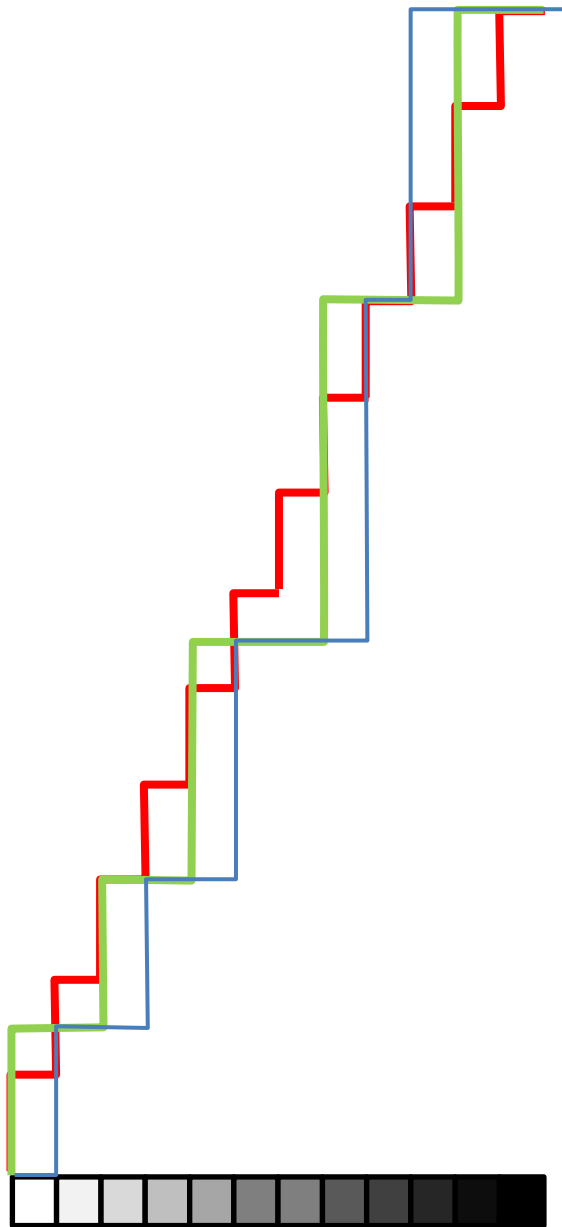
How to shift the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

Error = 15

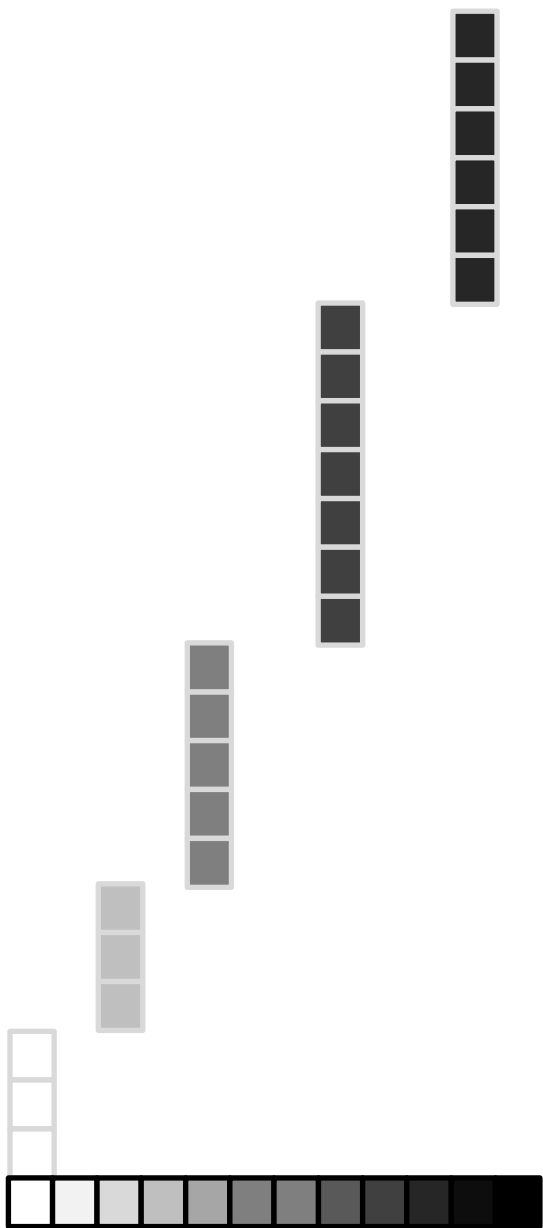


ideal accumulative function (red)
[old] real accumulative function (blue)
[new] real accumulative function (green)

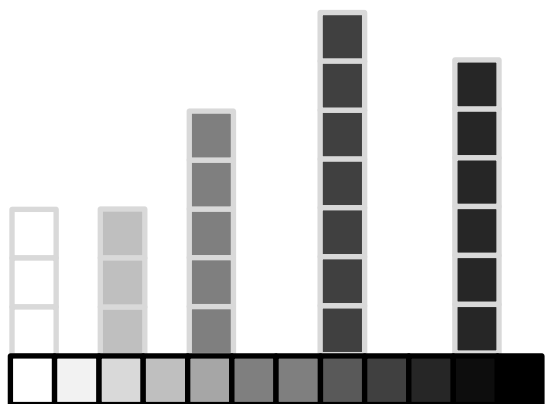
Error = 15 (green circles)



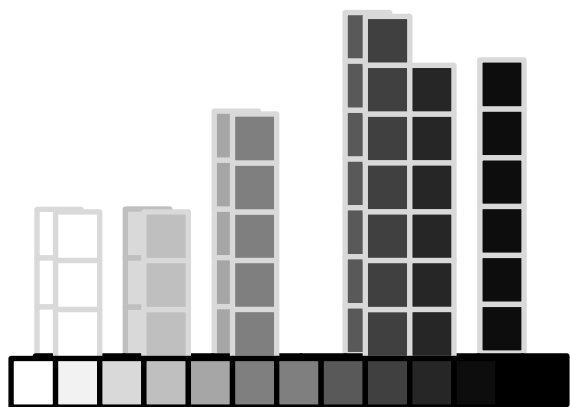
ideal accumulative function (red)
[old] real accumulative function (blue)
[new] real accumulative function (green)



Before



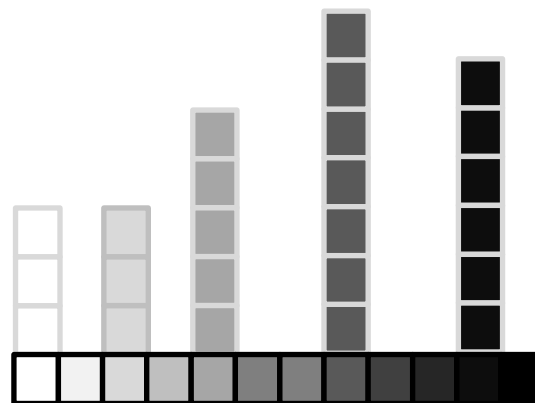
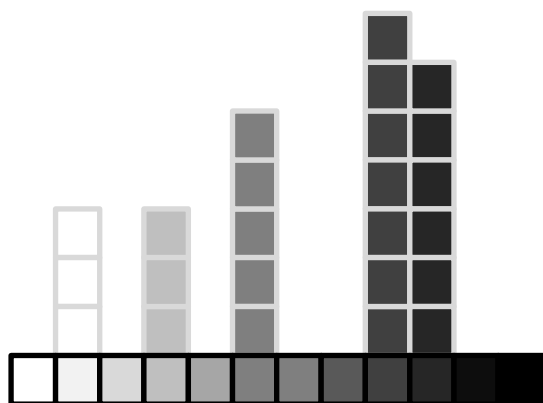
Before



Before

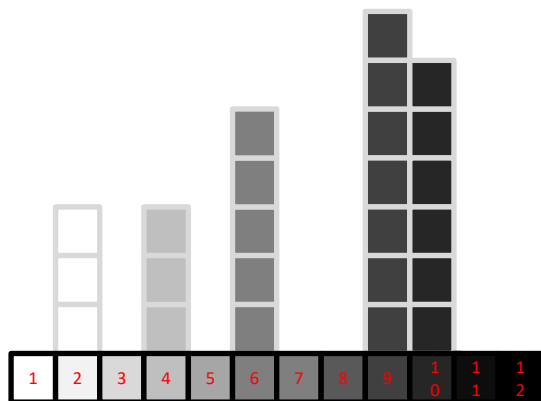


After



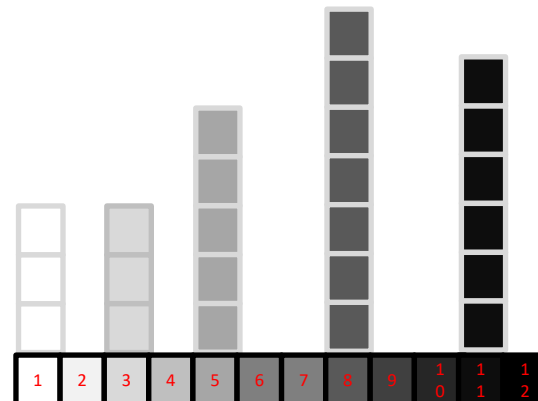
Before

4	6	9	6	4	6
9	6	4	9	9	9
9	6	2	2	9	2
10	10	10	10	10	10



After

3	5	8	5	3	5
8	5	3	8	8	8
8	5	1	1	8	1
11	11	11	11	11	11



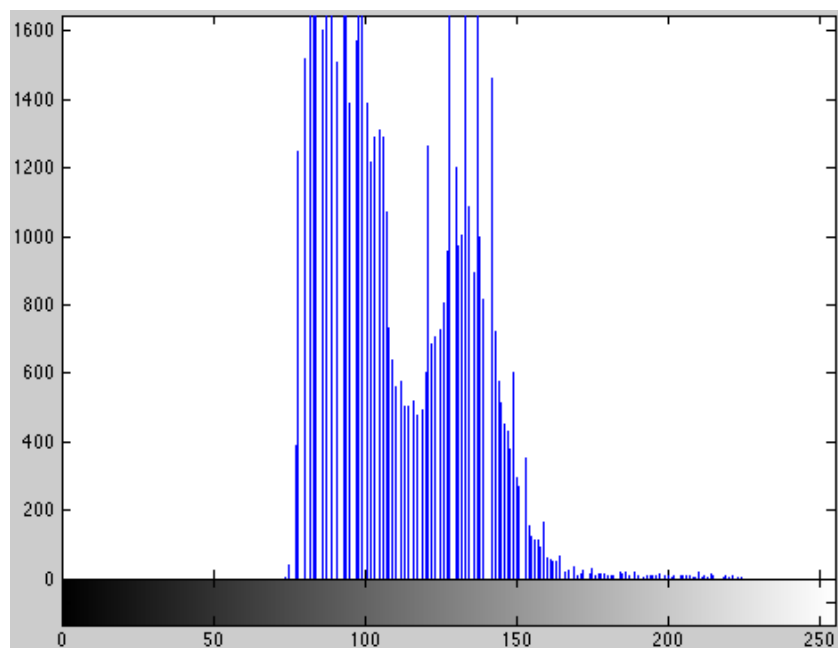
Before



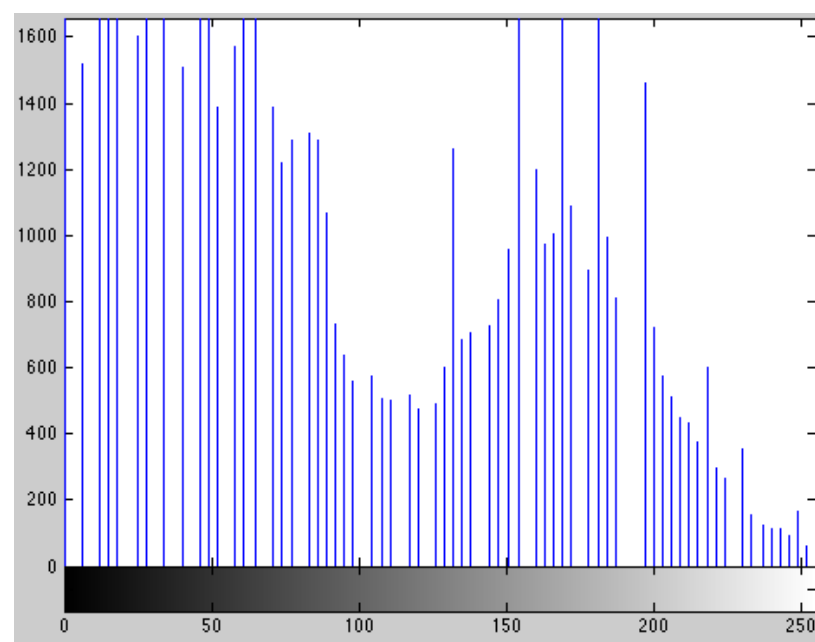
After

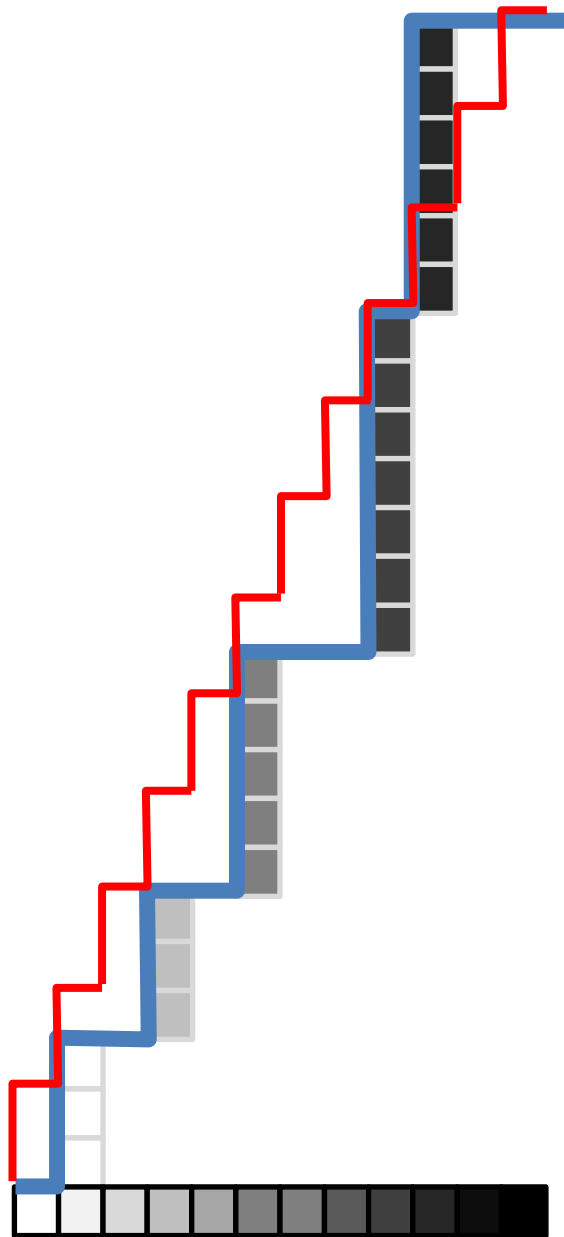


Before

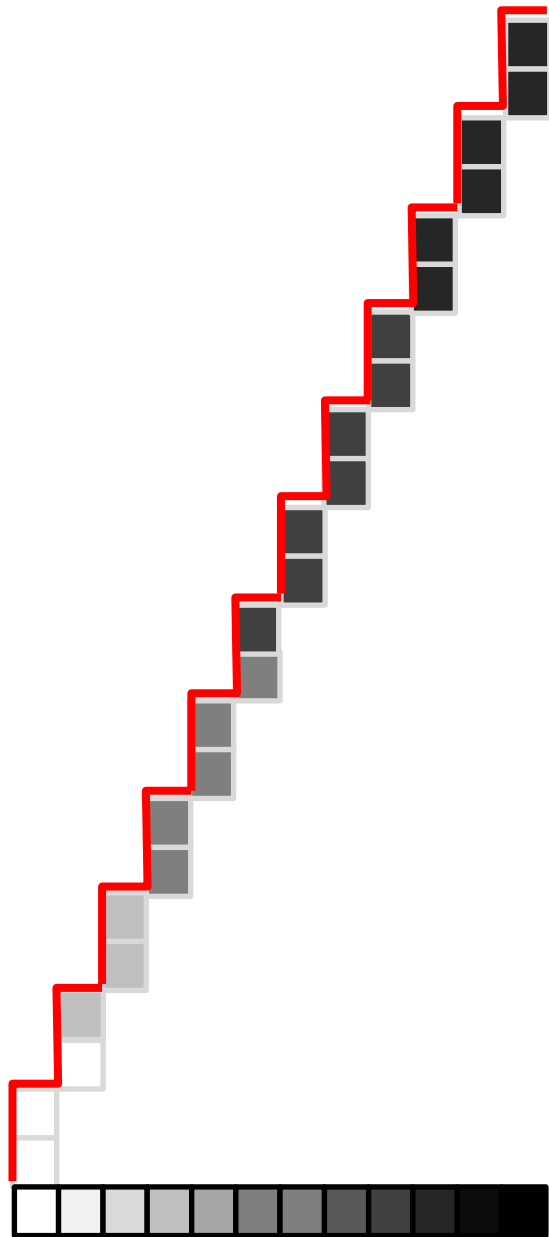


After





How to split the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?



How to split the bars, so that the difference between ideal accumulative function (red) and real accumulative function (blue) is minimal?

sorted

before

after

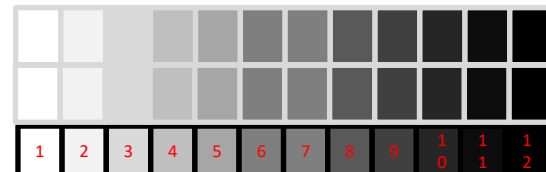
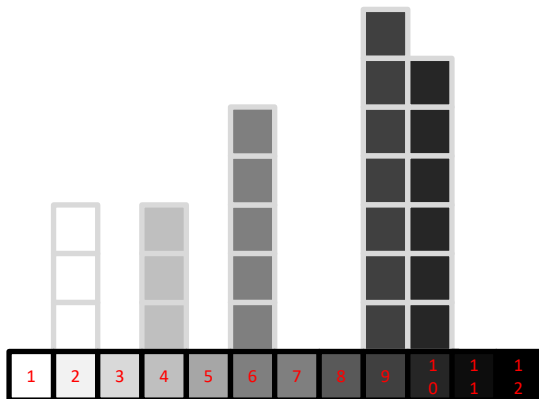
Before

4	6	9	6	4	6
9	6	4	9	9	9
9	6	2	2	9	2
10	10	10	10	10	10

4 2 1
6 2 1
9 2 2
6 4 2
4 4 3
6 4 3
9 6 4
6 6 4
4 6 5
9 6 5
9 6 6
9 9 6
9 9 7
6 9 7
2 9 8
2 9 8
9 9 9
2 9 9
10 10 10
10 10 10
10 10 11
10 10 11
10 10 12
10 10 12

After

2	4	6	4	3	5
7	5	3	7	8	8
9	6	1	1	9	2
10	10	11	11	12	12



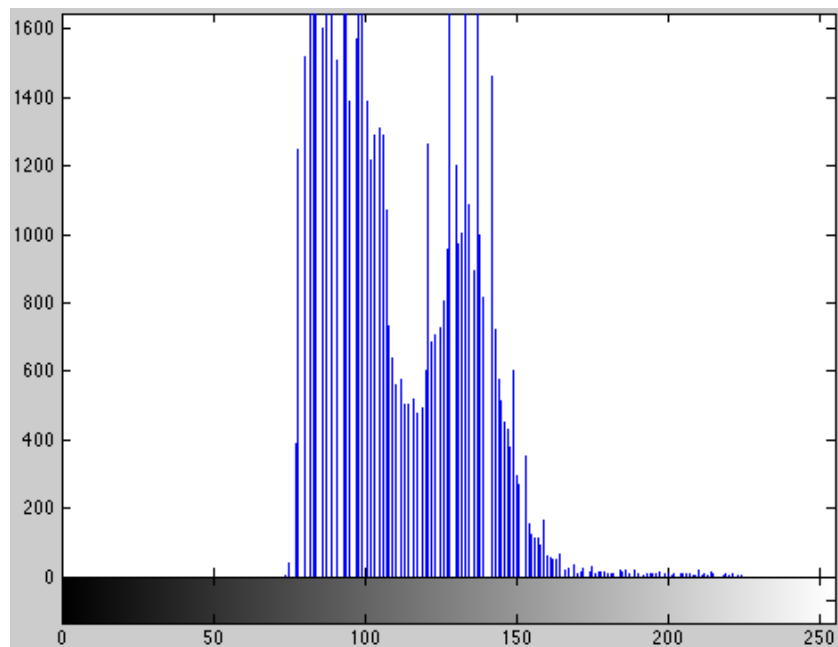
Before



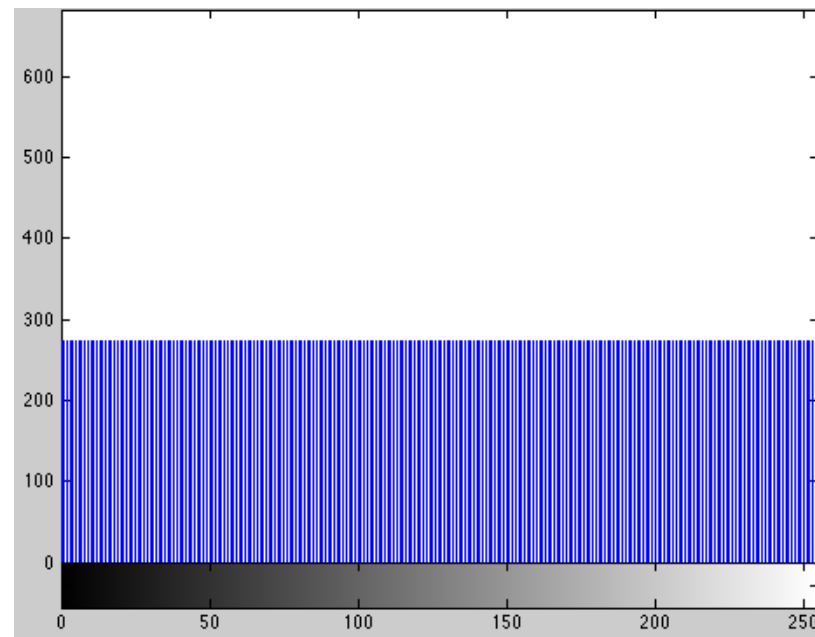
After



Before



After



Method 1



Method 2

