

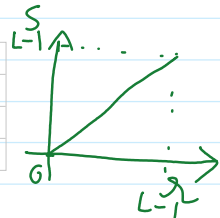
i) Identity Transformation

$$f(x,y) \Rightarrow$$

0	10	50	100
5	95	150	200
110	150	190	210
175	210	255	100

$g(x,y)$

0	10	50	100
5	95	150	200
110	150	190	210
175	210	255	100



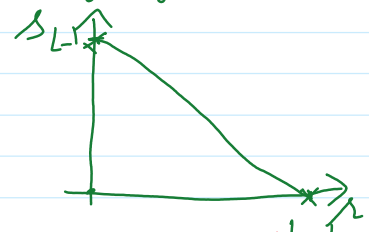
Lazy Transformation

$$S = f$$

2) Image Negative

0	10	50	100
5	95	150	200
110	150	190	210
175	210	255	100

255	245	205	155
250	160	105	55
145	105	165	45
80	45	0	155



$$S = (L-1) - f, \text{ where } L=256$$

$$S = 255 - f$$

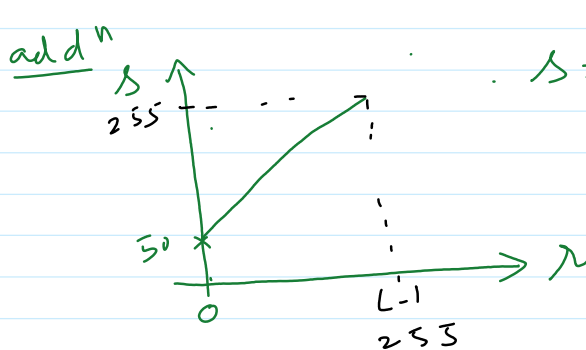
3) Brightness and Contrast modification

i) addⁿ, subⁿ, \times^n , \div^n

$$S = f \pm C$$

ii) multⁿ, divⁿ

$$S = f * C \begin{cases} C < 1 \Rightarrow \text{div}^n \\ C > 1 \Rightarrow \times^n \end{cases}$$



$$S = f + 50^C$$

ex	f	S
0	0	50
20	20	70
200	200	250
255	255	255

$[0 - (L-1)]$

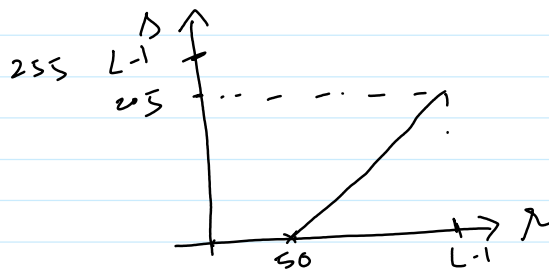
0	10	50	100
5	95	150	200
110	150	190	210
175	210	255	100

\Rightarrow

50	60	100	150
55	145	200	250
160	200	140	255
225	255	255	150

ii) Subtⁿ

$$S = \lambda - c \quad \text{where } c = 50$$



$$S \Rightarrow [0 \text{ to } 255]$$

$$0 \text{ to } 50 \Rightarrow 0$$

$$255 \Rightarrow 205$$

$$\lambda \Rightarrow [0 \text{ to } 255]$$

$$c = 50, S \Rightarrow [0 \text{ to } 205]$$

0	10	50	100
5	95	150	200
110	150	190	210
175	210	255	100

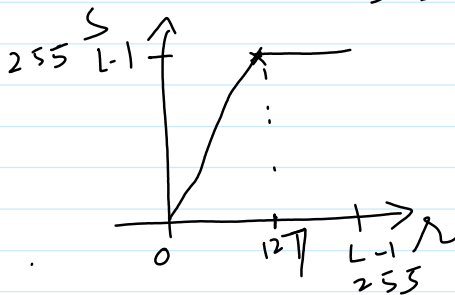
0 0 0 50
0 45 100 150
60 100 140 160
125 160 205 50

iii) multⁿ

$$S = \lambda \times c$$

$$\text{let } c = 2$$

$$S = \lambda \times 2$$



$$\lambda \mid S = \lambda \times 2$$

0	0
10	20
40	80
100	200

127	254
128	256 \rightarrow 255
255	

0	10	50	100
5	95	150	200
110	150	190	210
175	210	255	100

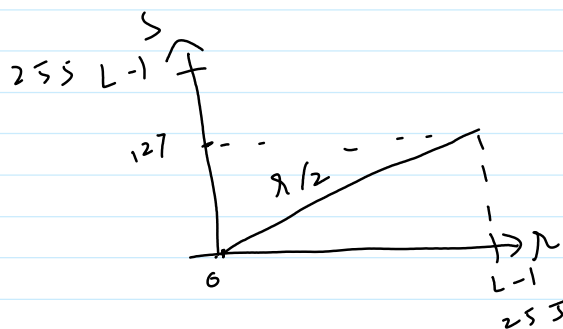
0 20 100 200
10 190 255 255
220 255 255 255
255 255 255 200

iv) Division

$$S = \lambda \times c \quad \text{where } c < 1$$

$$c = 0.5$$

$$S = \lambda \times 0.5 = \lambda / 2$$



$$\lambda \mid S = \lambda / 2$$

0	0
1	0
2	1
100	50
200	100
255	127

0	10	50	100
5	95	150	200
110	150	190	210
175	210	255	100

0 5 25 50
2 47 75 100
55 75 95 105
87 105 127 50

4) Log Transformation

$$S = C \log(1+r)$$

gray value
of input image

