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## Assignment 2

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$x$	$n_x$	$P(x)$	$F(x)$	$s$	$n_s$	$P(s)$	$G(s)$
0	4	0.25	0.25	0	7	0.4375	0.4375
1	4	0.25	0.50	1	3	0.1875	0.625
2	4	0.25	0.75	2	2	0.1250	0.750
3	4	0.25	1.00	3	4	0.2500	1

$$x=0; F(0) = 0.25$$

$F(0)$  is close to  $G(0)$

Mapping:

$$x=1; F(1) = 0.50$$

$F(1)$  is close to  $G(0)$

Input  $\rightarrow$  Output

$x \rightarrow s$

0  $\rightarrow$  0

1  $\rightarrow$  0

2  $\rightarrow$  2

3  $\rightarrow$  3

$$x=2; F(2) = 0.75$$

$F(2)$  is close to  $G(2)$

$$x=3; F(3) = 1$$

$F(3)$  is close to  $G(3)$



2 Given Image  $\Rightarrow \begin{bmatrix} -1 & 2 & -1 \\ 3 & 0 & 1 \\ -2 & 1 & 2 \end{bmatrix}$

Filter :  $\begin{bmatrix} -1 \\ 0 \\ 1 \end{bmatrix}$

Rotated filter :  $\begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}$

Output dimension :  $(3+3-1) \times (3+1-1)$   
 $= 5 \times 3$

Output =  $\begin{matrix} & 1 & & 1 & & 1 \\ & 0 & - & 0 & - & 0 \\ \text{(in computation)} & -1 & -1 & -1 & 2 & -1 & -1 \\ \text{I row} & 3 & 0 & 1 \\ & -2 & 1 & 2 \end{matrix}$  1st step

In computa<sup>n</sup> II row :  $\begin{matrix} & 1 & & -2 & & 1 \\ & 0 & -1 & 0 & 2 & 0 & -1 \\ & 3 & 0 & 1 \\ & -2 & 1 & 2 \end{matrix}$  2nd step

Ans. Output  $\begin{bmatrix} +1 & -2 & 1 \\ -3 & 0 & -1 \\ 1 & 1 & -3 \\ 3 & 0 & 1 \\ -2 & 1 & 2 \end{bmatrix}$  3rd

4th  $\begin{matrix} 1 & -2 & 1 \\ -3 & 0 & -1 \\ 1 & 1 & -3 \\ 3 & 0 & 1 \\ +1 & -2 & 1 \\ 0 & 1 & 2 \end{matrix}$  5th