

23-51-Q4

(a) 不考

(b) $\frac{\partial I}{\partial x}$: the change in image intensity along the x-axis

$\frac{\partial I}{\partial y}$: the change in image intensity along the y-axis

$\frac{\partial I}{\partial t}$ the change in image intensity over time

$\frac{\partial x}{\partial t}$: the horizontal velocity

$\frac{\partial y}{\partial t}$: the vertical velocity

(c) a b c d

P $\frac{40}{80}$ $\frac{20}{80}$ $\frac{10}{80}$ $\frac{10}{80}$

P 0.5 0.25 0.125 0.125

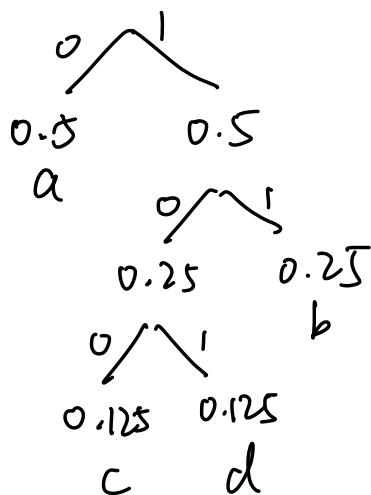
Solution

a 0.5 \rightarrow 0.5 \rightarrow 0.5

b 0.25 \rightarrow 0.25 $\left. \begin{array}{l} \uparrow \\ \downarrow \end{array} \right\} \rightarrow 0.5$

c 0.125 $\left. \begin{array}{l} \uparrow \\ \downarrow \end{array} \right\} \rightarrow 0.25 \rightarrow 0$

d 0.125 $\left. \begin{array}{l} \uparrow \\ \downarrow \end{array} \right\}$



a	0		
b	1	1	
c	1	0	0
d	1	0	1

cd) (i) $D(G(z)) \rightarrow 0$

because the generated images are of poor quality and easily identified as fake by the discriminator

(ii) No, when the GAN is successfully trained $D(G(z))$ is ideally around 0.5 for generated images indicating the discriminator cannot confidently distinguish between real and generated images. This implies that the generated images resemble real apples closely