

要使用 L-k 光流法, 我们首先要得到窗口内每一个像素的 ∇I 和

$$\frac{\partial I_{x,y}}{\partial t} \quad \text{由所给公式可以算得,}$$

$$\frac{\partial I'_{x,y}}{\partial x} = \begin{array}{c|c|c} 1 & 0 & -1 \\ \hline 2 & 0 & -2 \\ \hline 1 & 0 & -1 \end{array}, \quad \frac{\partial I'_{x,y}}{\partial y} = \begin{array}{c|c|c} 1 & 2 & 1 \\ \hline 0 & 0 & 0 \\ \hline -1 & -2 & -1 \end{array}$$

$$\frac{\partial I'_{x,y}}{\partial t} = \hat{I}_{x,y}^2 - \hat{I}_{x,y}' = \begin{array}{c|c|c} -1 & 0 & 1 \\ \hline -1 & -1 & 0 \\ \hline -9 & -1 & -1 \end{array}$$

$$\begin{array}{ccc} A & d & b \\ \left[\begin{array}{cc} 1 & 1 \\ 0 & 2 \\ -1 & 1 \\ 2 & 0 \\ 0 & 0 \\ -2 & 0 \\ 1 & -1 \\ 0 & -2 \\ -1 & -1 \end{array} \right] & (u,v)^T = - & \left[\begin{array}{c} -1 \\ 0 \\ 1 \\ -1 \\ -1 \\ 0 \\ -9 \\ -1 \\ -1 \end{array} \right] \end{array}$$

$$A^T A d = A^T b$$

$$\begin{pmatrix} 12 & 0 \\ 0 & 12 \end{pmatrix} \begin{pmatrix} u \\ v \end{pmatrix} = \begin{pmatrix} 12 \\ -12 \end{pmatrix} \Rightarrow u = 1, v = -1.$$

输入图像大小 $W \times W$, 卷积核大小 $F \times F$, 步长 S .

Padding 系数 P . 则新图像大小 $N \times N$

$$N = (W - F + 2P) / S + 1$$

所以 $N_1 = (256 - 5 + 4) / 5 + 1 = 52$, 52×52

$$N_2 = (52 - 3 + 2 \times 0) / 1 + 1 = 50 \quad 50 \times 50$$

$$N_3 = (50 - 3 + 2 \times 1) / 1 + 1 = 50 \quad 50 \times 50.$$