Intelligente Sehsysteme - Übungsblatt 8

Hendrik Walther, Jan Konrad

1   Harris Corner Detector

$$I_x = I * \begin{pmatrix} -1 & 0 & 1 \end{pmatrix} \qquad I_y = I * \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

I_x :

v \ u	-1 0 1
1	0 0 1
0	-1 0 1
-1	0 0 0

I_y :

v \ u	-1 0 1
1	-1 0 -1
0	-1 -1 -1
-1	0 -1 0

$$I_x^2 = I_x \cdot I_x \qquad I_y^2 = I_y \cdot I_y \qquad I_x I_y = I_x \cdot I_y$$

I_x^2 :

v \ u	-1 0 1
1	0 0 1
0	1 0 1
-1	0 0 0

I_y^2 :

v \ u	-1 0 1
1	1 0 1
0	1 1 1
-1	0 1 0

I_x^2 :

v \ u	-1 0 1
1	0 0 -1
0	1 0 -1
-1	0 0 0

1. $\langle I_x^2 \rangle = 3 \quad \langle I_y^2 \rangle = 6 \quad \langle I_x I_y \rangle = -1$

2. $\boldsymbol{A} = \begin{pmatrix} \langle I_x^2 \rangle & \langle I_x I_y \rangle \\ \langle I_x I_y \rangle & \langle I_y^2 \rangle \end{pmatrix} = \begin{pmatrix} 3 & -1 \\ -1 & 6 \end{pmatrix}$

3. $R = \det(\boldsymbol{A}) - \kappa \cdot \mathrm{trace}^2(\boldsymbol{A})$

   $= 3 \cdot 6 - (-1) \cdot (-1) - 0.1 \cdot (3 + 6)^2$

   $= 18 - 1 - 8.1$

   $= 8.9$