Titel

Namen

Distortion example

TECHNISCHE UNIVERSITÄT DARMSTADT

$$x = x_d + (x_d - x_c)(1 + K_1 r^2 + K_2 r^4) + P_1 \left(r^2 + 2(x_d - x_c)^2\right) + 2P_2(x_d - x_c)(y_d - y_c)$$
$$y = y_d + (y_d - y_c)(1 + K_1 r^2 + K_2 r^4) + 2P_1(x_d - x_c)(y_d - y_c) + P_2 \left(r^2 + 2((y_d - y_c)^2\right)$$

Radial distortion:

$K_n = n^{th}$ radial distortion coefficient

Tangential distortion:

$P_n = n^{th}$ tangential distortion coefficient

$(x_d, y_d) =$ distorted imaage point as projected on image plane

$(x, y) =$ undistorted imaage point as projected on image plane

$(x_c, y_c) =$ distortion center

$$r = \sqrt{(x_d - x_c)^2 + (y_d - y_c)^2}$$

Distortion example

TECHNISCHE UNIVERSITÄT DARMSTADT

$$x = x_d + (x_d - x_c)(1 + K_1 r^2 + K_2 r^4) + P_1 \left(r^2 + 2(x_d - x_c)^2\right) + 2P_2(x_d - x_c)(y_d - y_c)$$

$$y = y_d + (y_d - y_c)(1 + K_1 r^2 + K_2 r^4) + 2P_1(x_d - x_c)(y_d - y_c) + P_2 \left(r^2 + 2((y_d - y_c)^2\right)$$

Radial distortion:

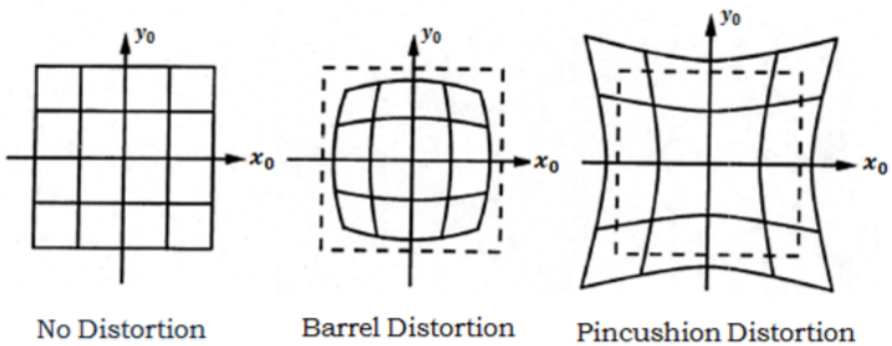


Abbildung: radial distortion possibilities

Tangential distortion:

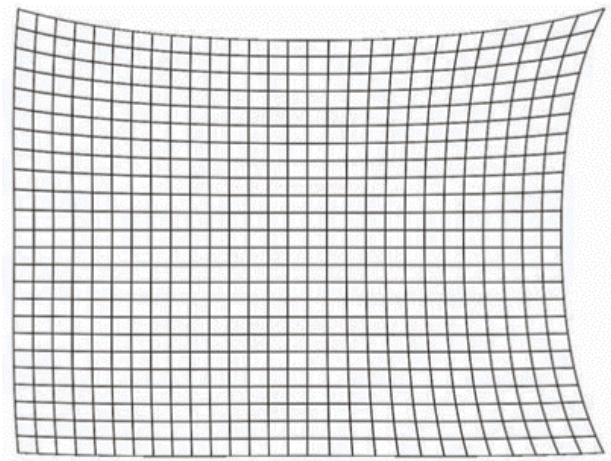
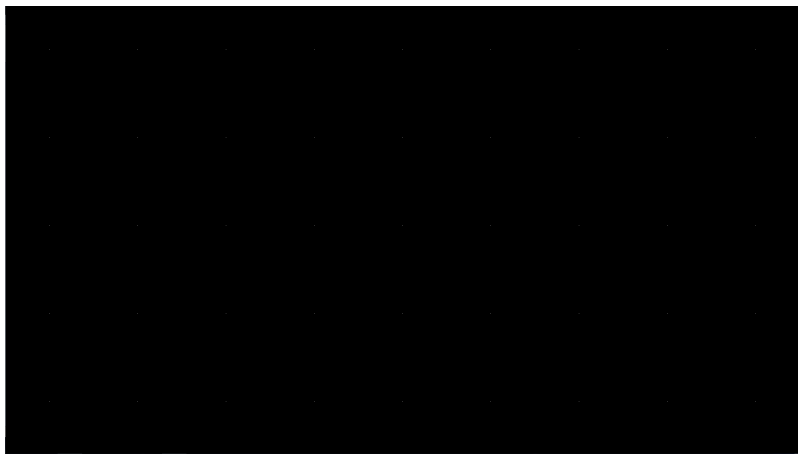


Abbildung: first order tangential distortion

pixel size detection

TECHNISCHE UNIVERSITÄT DARMSTADT

pixelSize = 1:



pixelSize = 8: