CAMERA CALIBRATION REPORT

PROJECT DETAILS

Camera: Apple iPhone 13

Filename: C:\Users\Best\Desktop\§@•⁄@\revise_pic\fiƟ¿.aus

Calibration Date: 19/11/2024 18:26pm

METRIC CALIBRATION PARAMETERS

Resolution = 4032 x 3024 pixels

Pixel width = 0.0017mm, Pixel height = 0.0017mm

		VALUE	STANDARD ERROR
Principal distance	c =	5.3900mm	0.013mm
Principal point offset in x-image coordinate	xp =	-0.1184mm	0.002mm
Principal point offset in y-image coordinate	yp =	2.4922mm	0.002mm
3rd-order term of radial distortion correction	K1 =	-1.00177e-03	1.8959e-04
5th-order term of radial distortion correction	K2 =	2.03456e-05	4.0643e-05
7th-order term of radial distortion correction	K3 =	-9.70087e-07	2.7854e-06
Coefficient of decentering distortion	P1 =	-7.0745e-05	3.417e-05
Coefficient of decentering distortion	P2 =	-2.5190e-03	6.702e-05
Differential scaling between x & y	B1 =	-1.9609e-01	2.001e-19
Non-orthogonality between x & y axes	B2 =	-1.8885e-02	2.001e-19
9th-order term of radial distortion correction	K4 =	0.00000e+00	0.0000e+00
11th-order term of radial distortion correction	K5 =	0.00000e+00	0.0000e+00

STANDARD CORRECTION EQUATION

The corrected image coordinates x(corr) & y(corr) can be calculated from the measured coordinates x(meas) & y(meas) by using the formulas:

x = x(meas) - xp

y = y(meas) - yp

x and y are now with respect to the principal point,

r^2 = x^2 + y^2

dr = K1•r^3 + K2•r^5 + K3•r^7 + K4•r^9 + K5•r^11

x(corr) = x(meas) - xp + x•dr/r + P1•(r^2 + 2x^2) + 2•P2•x•y

y(corr) = y(meas) - yp + y•dr/r + P2•(r^2 + 2y^2) + 2•P1•x•y

Camera self-calibration determined in a network of 9 images and 104 points, to an image measurement accuracy (RMS 1-sigma) of 22.76 pixels or 38.70 um.

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GAUSSIAN RADIAL DISTORTION CORRECTION PROFILE (dr)

For principal distance c, Gaussian radial distortion correction dr (microns) is given for any radial distance r (mm) as:

dr = K1•r^3 + K2•r^5 + K3•r^7 + K4•r^9 + K5•r^11

correction dx = x•dr/r

correction dy = y•dr/r

	VALUE	STANDARD ERROR
c =	5.390mm	0.0130mm
K1 =	-1.00177e-03	1.8959e-04
K2 =	2.03456e-05	4.0643e-05
K3 =	-9.70087e-07	2.7854e-06
K4 =	0.00000e+00	0.0000e+00
K5 =	0.00000e+00	0.0000e+00

r(mm)	dr(microns)
0.00	0.0
0.25	-0.0
0.50	-0.1
0.75	-0.4
1.00	-1.0
1.25	-1.9
1.50	-3.2
1.75	-5.1
2.00	-7.5
2.25	-10.5
2.50	-14.3
2.75	-18.8
3.00	-24.2
3.25	-30.7
3.50	-38.5
3.75	-47.9
4.00	-59.2
4.25	-73.0

CAMERA CALIBRATION REPORT

BALANCED RADIAL DISTORTION CORRECTION PROFILE(dr)

For 'balanced' principal distance cb, radial distortion correction dr (microns) is given for any radial distance r (mm) as:

dr = K0•r + K1•r^3 + K2•r^5 + K3•r^7 + K4•r^9 + K5•r^11

cb = 5.4339mm

K0 = 8.14086e-03

K1 = -1.00992e-03

K2 = 2.05112e-05

K3 = -9.77984e-07

K4 = 0.00000e+00

K5 = 0.00000e+00

r(mm)	dr(microns)
0.00	0.0
0.25	2.0
0.50	3.9
0.75	5.7
1.00	7.2
1.25	8.3
1.50	8.9
1.75	9.1
2.00	8.7
2.25	7.7
2.50	6.0
2.75	3.4
3.00	0.0
3.25	-4.5
3.50	-10.3
3.75	-17.7
4.00	-27.1
4.25	-39.0

Distortion profile is 'balanced' (dr = 0.0) about a radial distance of r = 3.0mm

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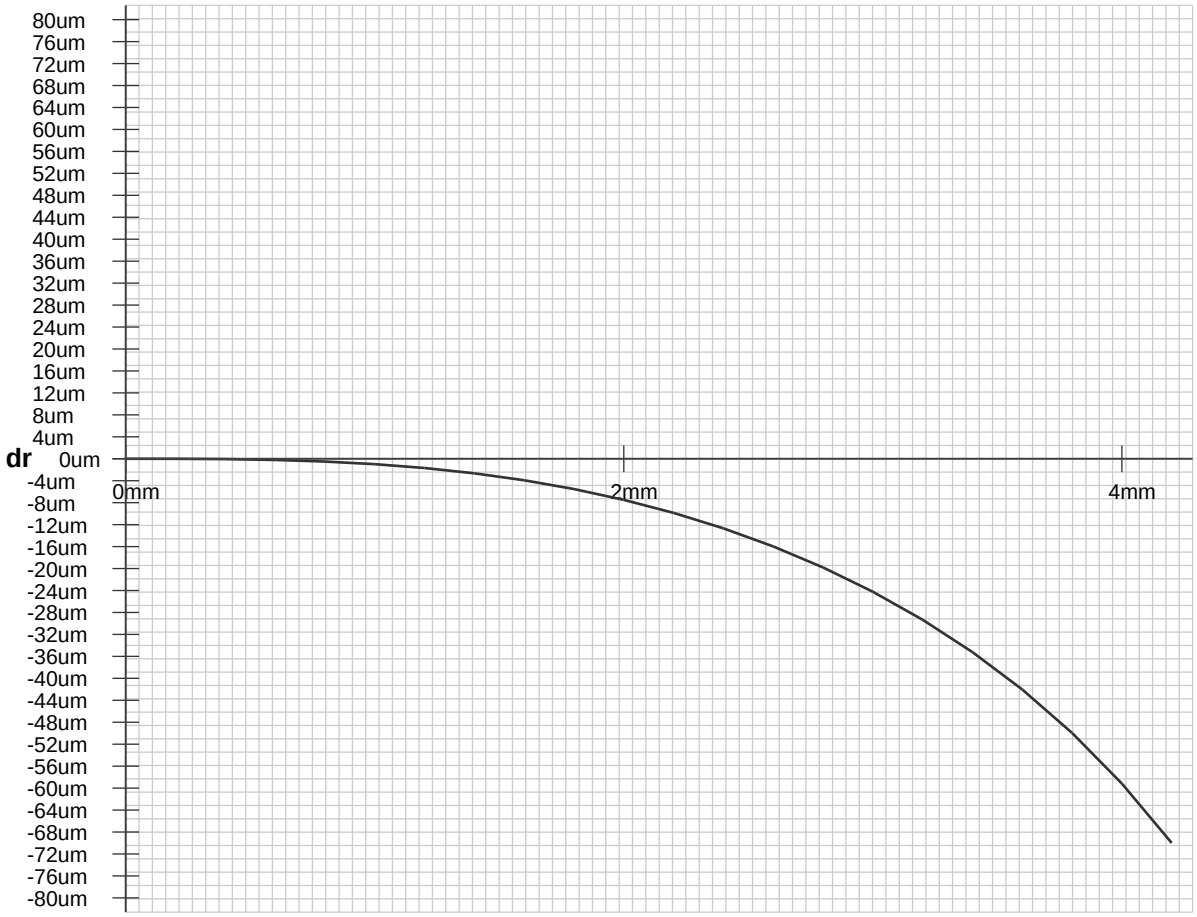
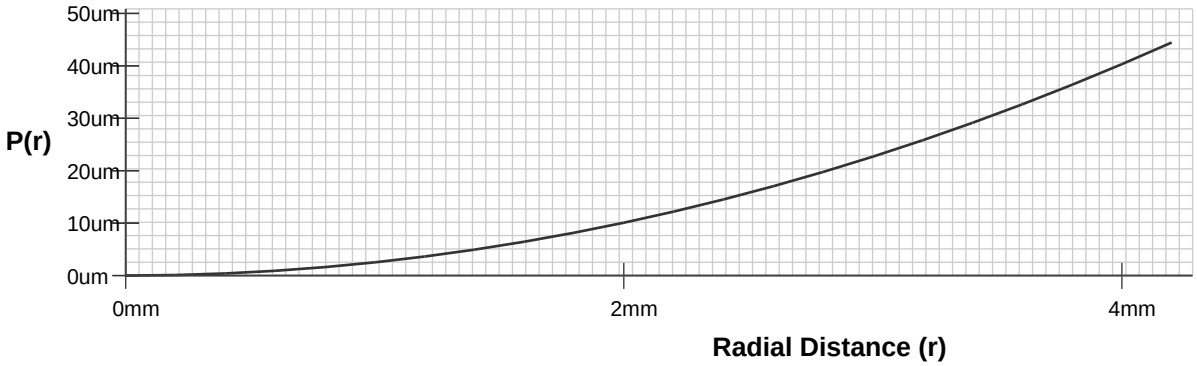
GAUSSIAN RADIAL DISTORTION PLOT [dr shown in micrometres]



DECENTRING DISTORTION PLOT [P(r) shown in micrometres]



(If present, – – – – – indicates the maximum radial distance encountered in the self-calibration.)

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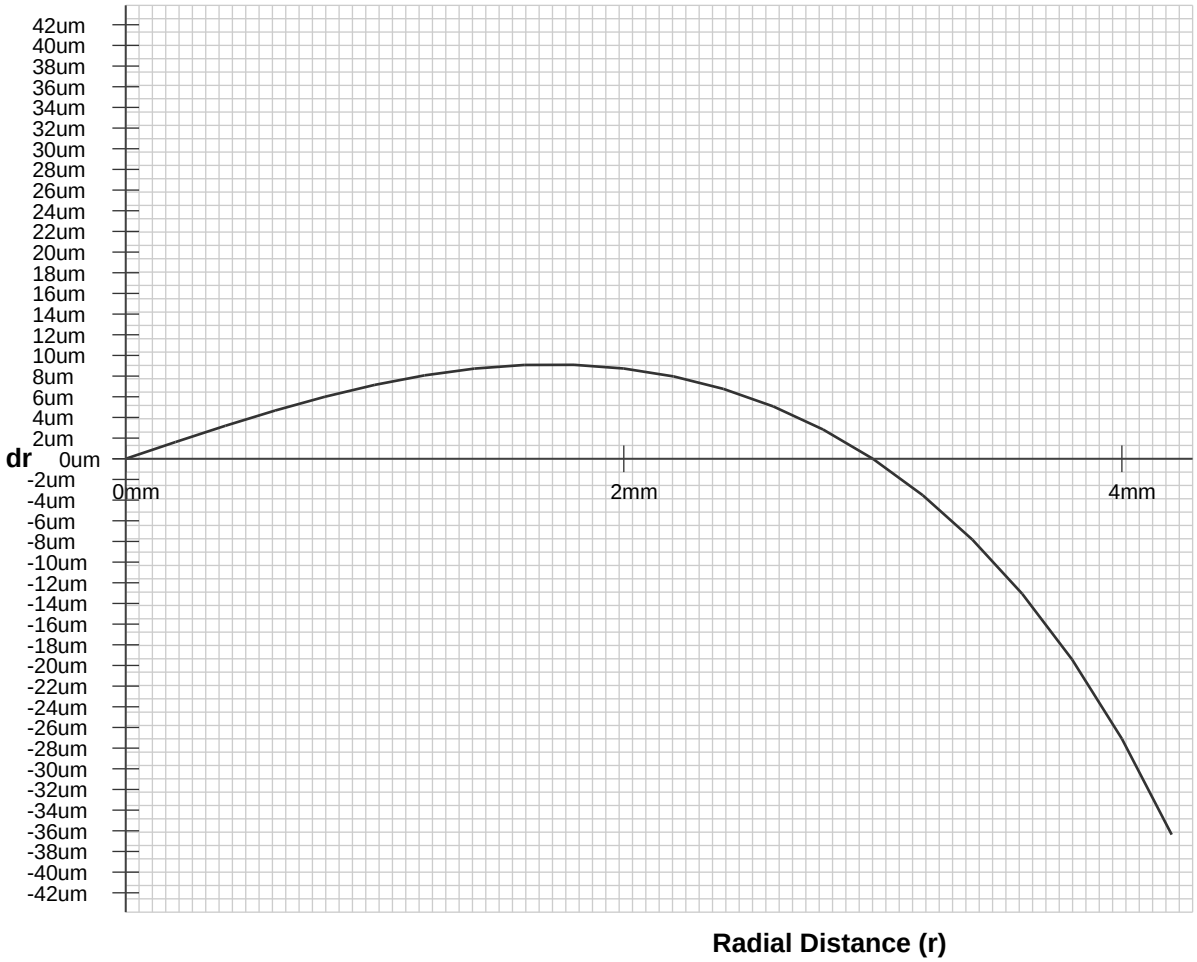
BALANCED RADIAL DISTORTION PLOT [dr shown in micrometres]



(If present, – – – – – indicates the maximum radial distance encountered in the self-calibration.)