CAMERA CALIBRATION REPORT

PROJECT DETAILS

Camera: samsung a53

Filename:

Calibration Date: 19/11/2024 15:21pm

METRIC CALIBRATION PARAMETERS

Resolution = 4624 x 2604 pixels

Pixel width = 0.0008mm, Pixel height = 0.0008mm

		VALUE	STANDARD ERROR
Principal distance	c =	3.3956mm	0.005mm
Principal point offset in x-image coordinate	xp =	-0.0227mm	< 0.001mm
Principal point offset in y-image coordinate	yp =	1.2544mm	< 0.001mm
3rd-order term of radial distortion correction	K1 =	-1.72545e-03	7.1977e-04
5th-order term of radial distortion correction	K2 =	7.80170e-05	2.7210e-04
7th-order term of radial distortion correction	K3 =	2.42410e-05	2.9396e-05
Coefficient of decentering distortion	P1 =	0.0000e+00	0.000e+00
Coefficient of decentering distortion	P2 =	0.0000e+00	0.000e+00
No significant differential scaling present	B1 =	0.0000e+00	0.000e+00
No significant non-orthogonality present	B2 =	0.0000e+00	0.000e+00
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 15 images and 104 points, to an image measurement accuracy (RMS 1-sigma) of 2.24 pixels or 1.79 um, and qf of 1.1.

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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 =	3.396mm	0.0047mm
K1 =	-1.72545e-03	7.1977e-04
K2 =	7.80170e-05	2.7210e-04
K3 =	2.42410e-05	2.9396e-05
K4 =	0.00000e+00	0.0000e+00
K5 =	0.00000e+00	0.0000e+00

r(mm)	dr(microns)
0.00	0.0
0.13	-0.0
0.25	-0.0
0.38	-0.1
0.50	-0.2
0.63	-0.4
0.75	-0.7
0.88	-1.1
1.00	-1.6
1.13	-2.3
1.25	-3.0
1.38	-3.9
1.50	-4.8
1.63	-5.8
1.75	-6.7
1.88	-7.6
2.00	-8.2

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 = 3.4065mm

K0 = 3.22153e-03

K1 = -1.73101e-03

K2 = 7.82683e-05

K3 = 2.43191e-05

K4 = 0.00000e+00

K5 = 0.00000e+00

r(mm)	dr(microns)
0.00	0.0
0.13	0.4
0.25	0.8
0.38	1.1
0.50	1.4
0.63	1.6
0.75	1.7
0.88	1.7
1.00	1.6
1.13	1.4
1.25	1.0
1.38	0.5
1.50	0.0
1.63	-0.6
1.75	-1.1
1.88	-1.6
2.00	-1.8

Distortion profile is 'balanced' (dr = 0.0) about a radial distance of r = 1.5mm

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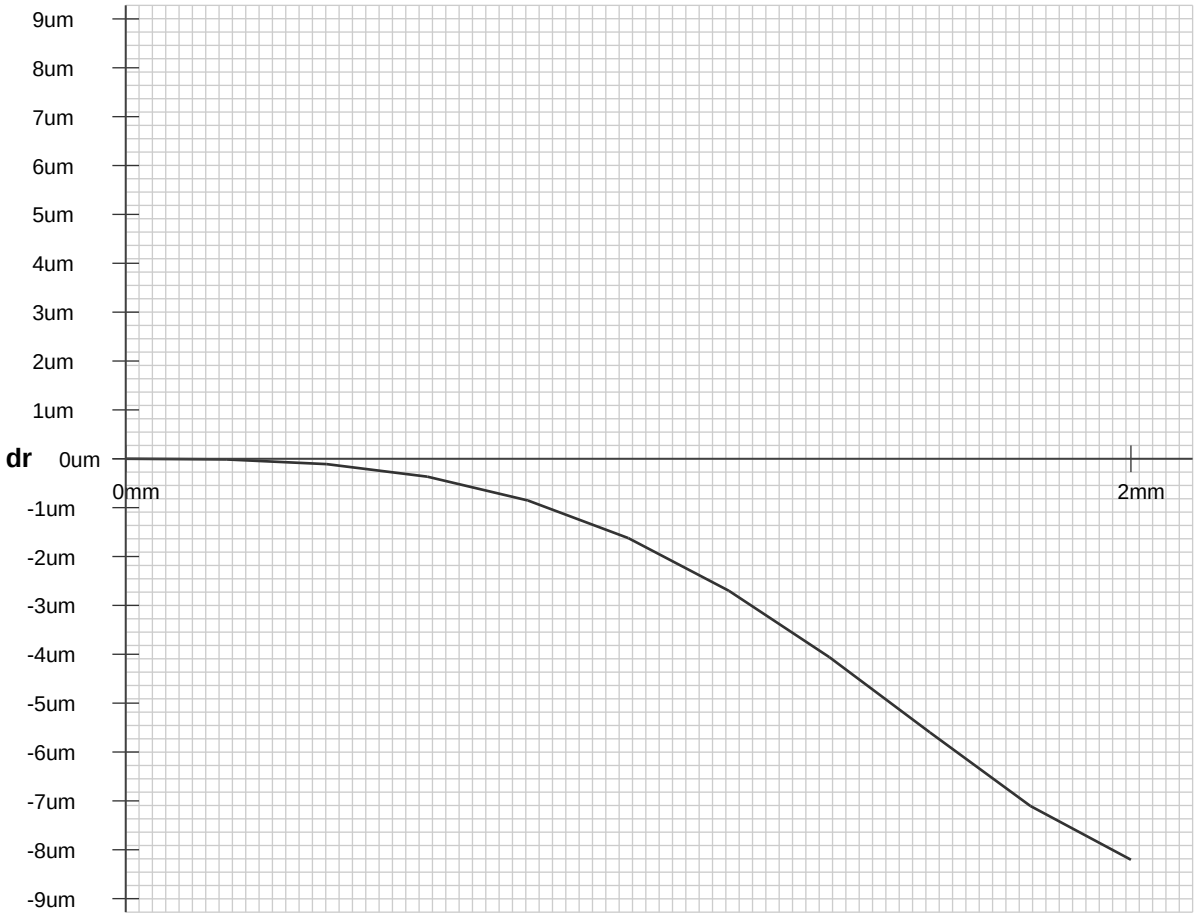
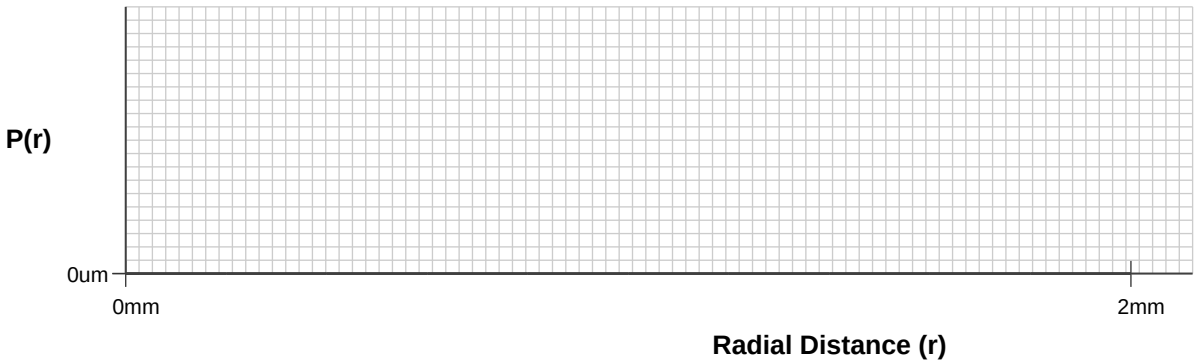
GAUSSIAN RADIAL DISTORTION PLOT [dr shown in micrometres]



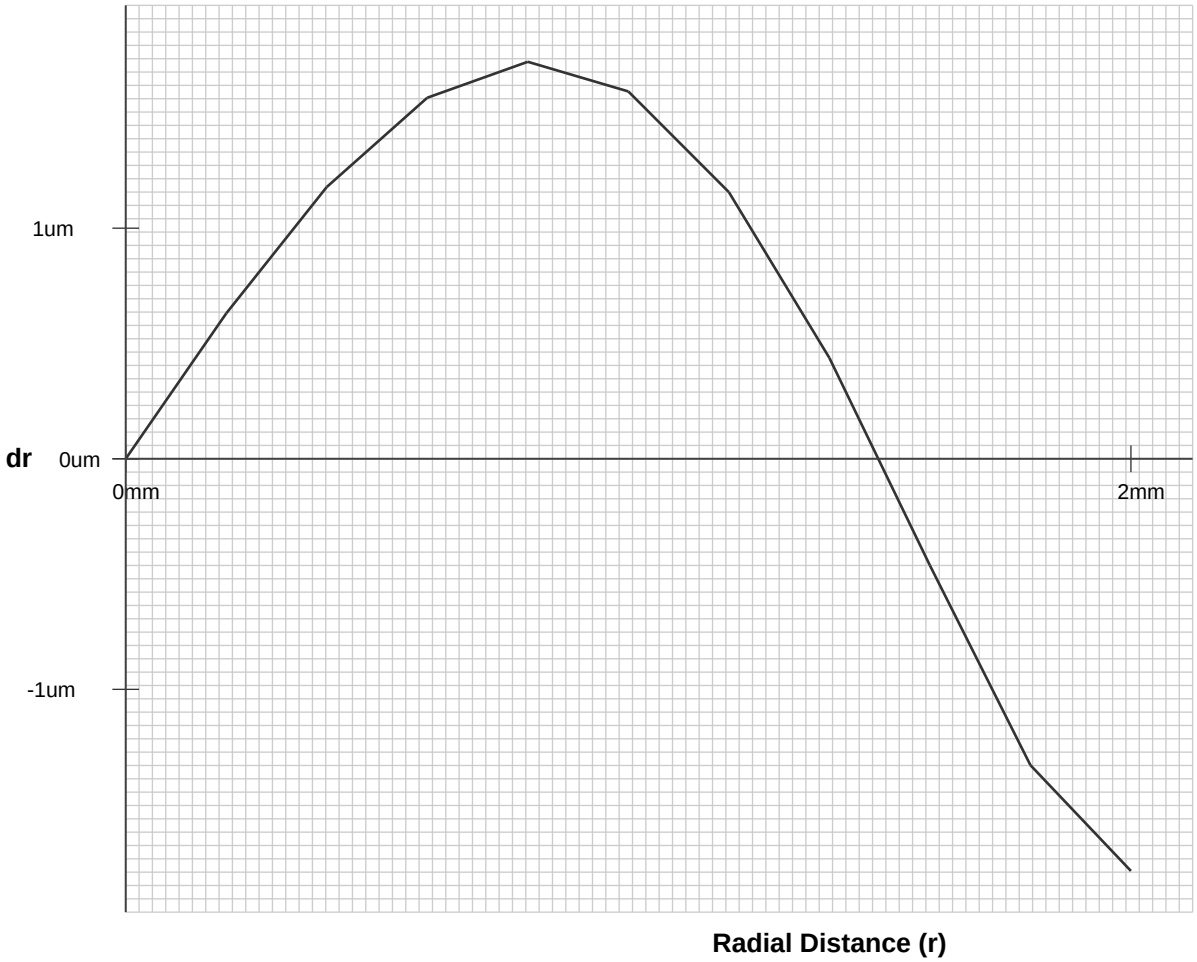
DECENTRING DISTORTION PLOT [P(r) shown in micrometres]



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

CAMERA CALIBRATION REPORT

BALANCED RADIAL DISTORTION PLOT [dr shown in micrometres]



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