

# **rafiki\_test**

**report**

**16 August 2024**



# Survey Data

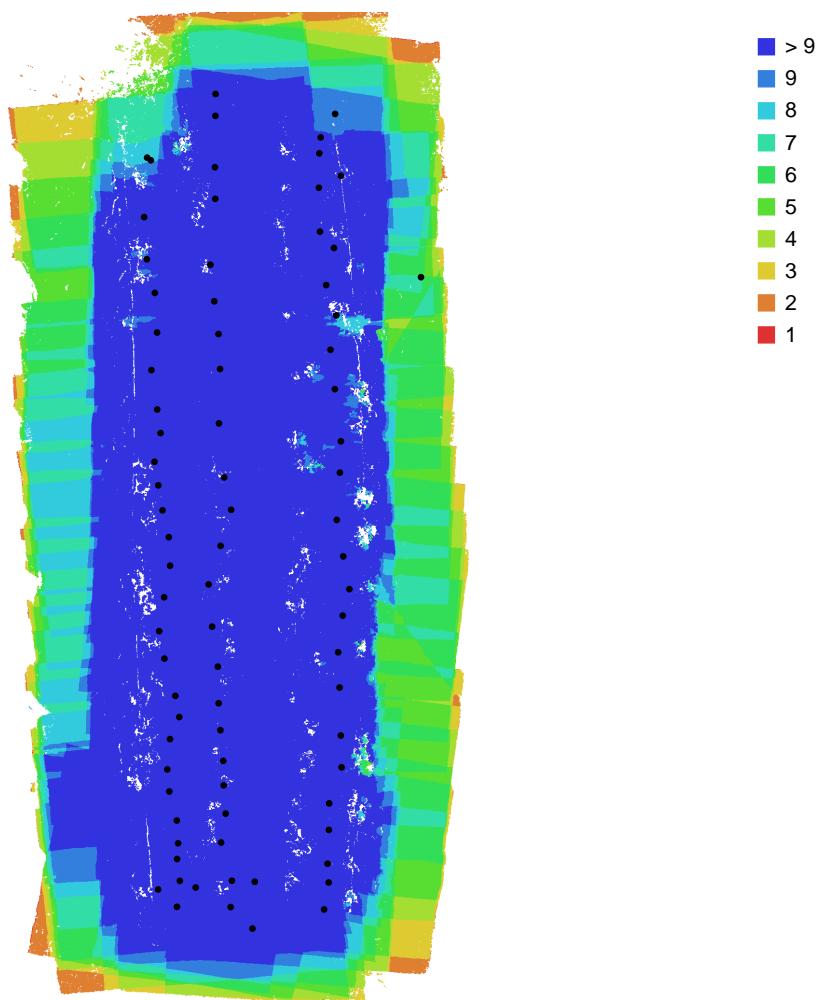


Fig. 1. Camera locations and image overlap.

Number of images:	81	Camera stations:	81
		Tie points:	647,017
		Projections:	1,992,184
		Reprojection error:	0.941 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
unknown	4032 x 3024	unknown	unknown	No
iPhone 12, iPhone 12 back...	4032 x 3024	4.2 mm	1.39 x 1.39 um	No

Table 1. Cameras.

# Camera Calibration

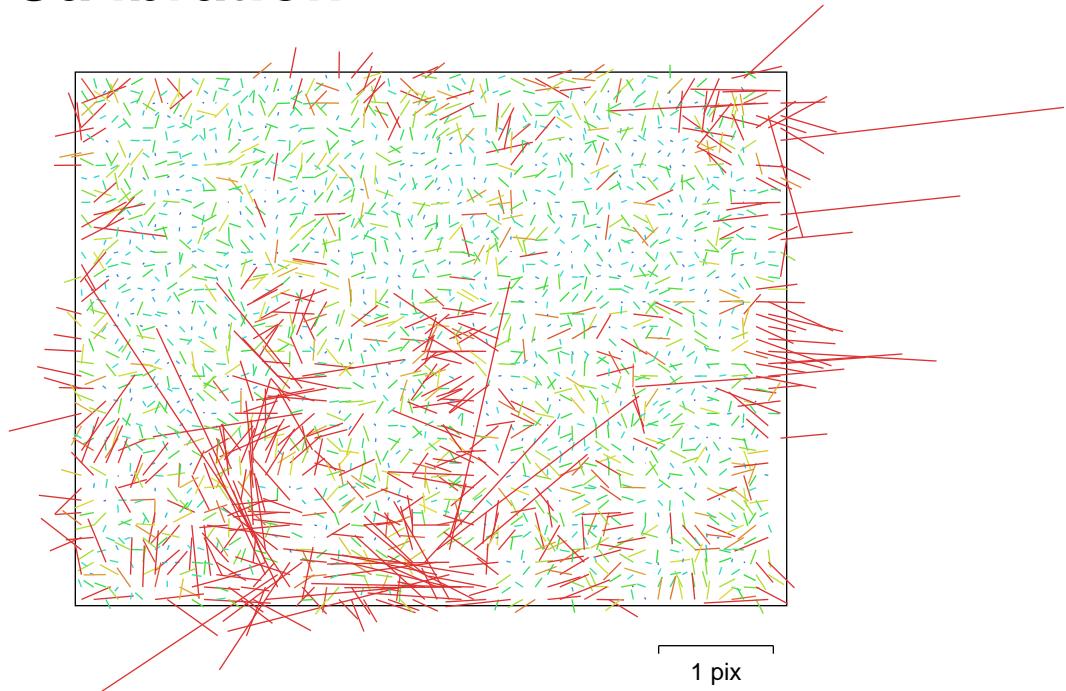


Fig. 2. Image residuals for unknown.

## unknown

4 images, additional corrections

Type	Resolution	Focal Length	Pixel Size
Frame	4032 x 3024	unknown	unknown

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	2970.36	1.5	1.00	-0.14	-0.03	-0.77	0.75	-0.73	-0.15	0.02
Cx	0.670102	0.56		1.00	0.00	0.07	-0.06	0.05	0.87	-0.05
Cy	-2.70099	0.66			1.00	0.01	-0.02	0.02	0.01	0.90
K1	0.130526	0.0029				1.00	-0.99	0.98	0.12	0.03
K2	-0.248811	0.0066					1.00	-1.00	-0.11	-0.03
K3	0.131274	0.0049						1.00	0.11	0.04
P1	0.00270743	9.4e-05							1.00	-0.01
P2	0.000763364	0.00012								1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Calibration

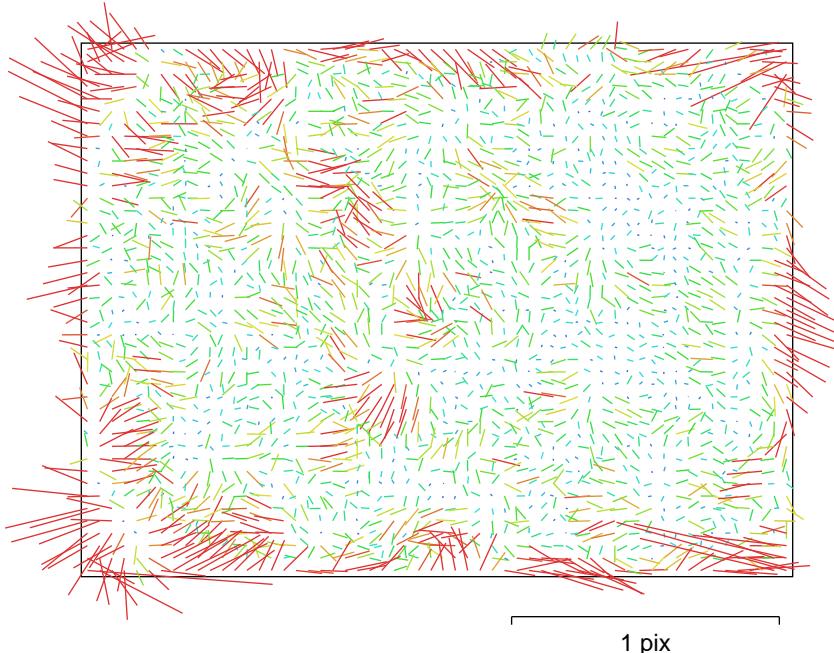


Fig. 3. Image residuals for iPhone 12, iPhone 12 back dual wide camera 4.2mm f/1.6 (4.2mm).

## iPhone 12, iPhone 12 back dual wide camera 4.2mm f/1.6 (4.2mm)

77 images, additional corrections

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>4032 x 3024</b>	<b>4.2 mm</b>	<b>1.39 x 1.39 um</b>

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
<b>F</b>	<b>2946.24</b>	0.7	1.00	-0.41	0.00	-0.10	0.09	-0.08	0.05	0.03
<b>Cx</b>	<b>21.6226</b>	0.15		1.00	-0.02	-0.08	0.09	-0.08	0.61	-0.03
<b>Cy</b>	<b>-6.10379</b>	0.14			1.00	-0.00	-0.00	0.00	-0.04	0.86
<b>K1</b>	<b>0.117614</b>	0.00051				1.00	-0.98	0.96	0.00	-0.00
<b>K2</b>	<b>-0.209885</b>	0.0011					1.00	-0.99	-0.03	-0.01
<b>K3</b>	<b>0.100533</b>	0.00079						1.00	0.03	0.01
<b>P1</b>	<b>0.00234181</b>	2.1e-05							1.00	-0.02
<b>P2</b>	<b>-0.000749868</b>	2.5e-05								1.00

Table 3. Calibration coefficients and correlation matrix.

# Digital Elevation Model

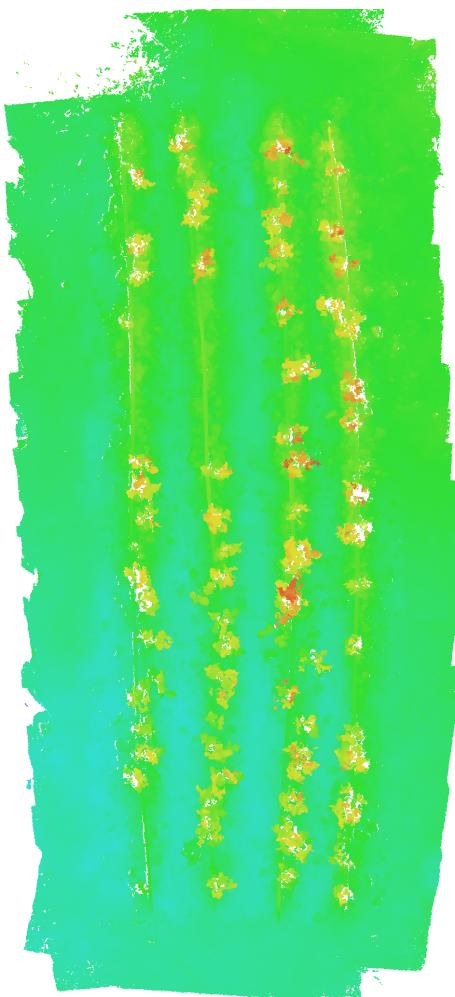


Fig. 4. Reconstructed digital elevation model.

# Processing Parameters

## General

Cameras	81
Aligned cameras	81
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll

## Tie Points

Points	647,017 of 722,445
RMS reprojection error	0.235731 (0.940761 pix)
Max reprojection error	1.38023 (50.9499 pix)
Mean key point size	3.97142 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.19159

## Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	600,000
Key point limit per Mpx	10,000
Tie point limit	200,000
Exclude stationary tie points	No
Guided image matching	No
Matching time	46 seconds
Matching memory usage	740.69 MB

## Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Fit additional corrections	Yes
Adaptive camera model fitting	No
Optimization time	29 seconds
Date created	2024:08:16 09:20:06
Software version	2.0.2.16404
File size	69.65 MB

## Depth Maps

Count	81
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## Depth maps generation parameters

Quality	High
Filtering mode	Moderate
Processing time	1 minutes 54 seconds
Memory usage	8.01 GB
Date created	2024:08:16 09:24:19
Software version	2.0.2.16404
File size	380.05 MB

## Point Cloud

Points	32,808,530
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## Point attributes

Color	3 bands, uint8
Normal	

## Point classes

Created (never classified)	32,808,530
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## Depth maps generation parameters

Quality	High
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Filtering mode	Moderate
Processing time	1 minutes 54 seconds
Memory usage	8.01 GB
<b>Point cloud generation parameters</b>	
Processing time	2 minutes 18 seconds
Memory usage	10.40 GB
Date created	2024:08:16 09:26:39
Software version	2.0.2.16404
File size	426.74 MB
<b>DEM</b>	
Size	3,255 x 7,083
Coordinate system	Local Coordinates (m)
<b>Reconstruction parameters</b>	
Source data	Point cloud
Interpolation	Enabled
Processing time	30 seconds
Memory usage	371.75 MB
Date created	2024:08:16 09:27:10
Software version	2.0.2.16404
File size	58.68 MB
<b>Orthomosaic</b>	
Size	6,510 x 14,166
Coordinate system	Local Coordinates (m)
Colors	3 bands, uint8
<b>Reconstruction parameters</b>	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	1 minutes 14 seconds
Memory usage	2.53 GB
Date created	2024:08:16 09:27:44
Software version	2.0.2.16404
File size	1.29 GB
<b>System</b>	
Software name	Agisoft Metashape Professional
Software version	2.0.2 build 16404
OS	Linux 64 bit
RAM	1.47 TB
CPU	Intel(R) Xeon(R) Gold 6258R CPU @ 2.70GHz
GPU(s)	NVIDIA A100 80GB PCIe