



Length Distribution Analysis using **Avizo**

Sarawuth Wantha, PhD
Product Application Specialist

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Length Distribution Analysis using Avizo

The screenshot displays the Avizo for Industrial Inspection software interface. The top menu bar includes File, Edit, Project, View, Window, XPand, Python, XScreen, and Help. Below the menu is a toolbar with icons for various functions. The main workspace is divided into several panels:

- Project View:** Shows a tree structure with 'Label.am' selected. It also includes buttons for 'Open Data...', 'Local Axes', 'Ortho Slice', 'Volume Rendering', and 'Label Analysis'.
- Properties:** Displays metadata for 'Label.am'. The 'Data Info' field is circled in red, indicating 'label (binary), 8-bit unsigned, min max: 0...1'. Other fields include Lattice Info (1556 x 189 x 50, uniform coordinates), Memory Size (14.0 Mb), Physical Size (1555, 188, 49 [mm] from 0, 0, 0 [mm]), Voxel Size (1 x 1 x 1 [mm]), and a Preview image showing a blue segmented object.
- 3D View:** Shows a 3D visualization of the loaded data as a blue segmented volume within a coordinate system (x, y, z in mm). A yellow text box 'Load a label image' is overlaid on this view.

The Avizo logo is visible in the bottom left corner of the 3D view area.

Length Distribution Analysis using Avizo

Avizo for Industrial Inspection - Untitled

File Edit Project View Window XPand Python XScreen Help

START PROJECT METROLOGY RECIPES SEGMENTATION MESHING FILAMENT ANIMATION REPORTING

Project View

Open Data...

Contrast Control Roi Slice Voxel Slice Cylinder Slice

Convert Image Type Label.am Local Axes Label.to-labelfield-16_bits* Ortho Slice

Properties

Ortho Slice

Data: Label.to-labelfield-16_bits

Orientation: xy xz yz

Slice Number: 0

Mapping Type: Colormap

Colormap: 1 8 Edit

Options: ☐ adjust view ☐ bilinear view ☐ lighting

Frame: ☒ show width: 1

Transparency: ☒ None ☐ Binary ☐ Alpha

Embossing: ☐ OFF

auto-refresh Apply

Convert Image Type to 16-bit label

Properties

Convert Image Type

Data: Label.am

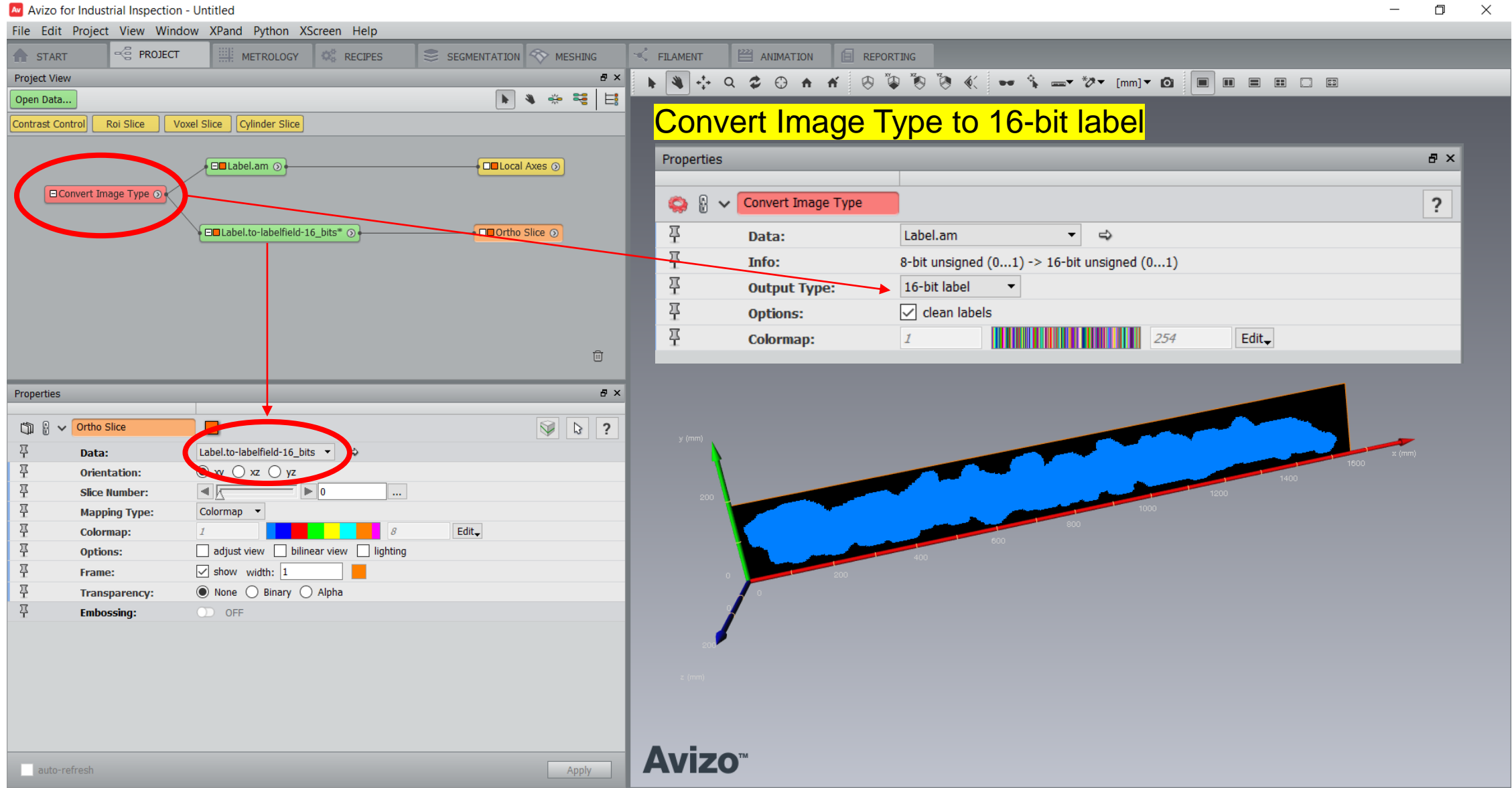
Info: 8-bit unsigned (0...1) -> 16-bit unsigned (0...1)

Output Type: 16-bit label

Options: ☒ clean labels

Colormap: 1 254 Edit

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START PROJECT METROLOGY RECIPES SEGMENTATION MESHING FILAMENT ANIMATION REPORTING

Project View

Open Data...

Arithmetic Ortho Slice Local Axes Convert Image Type

Convert Image Type Label.am Local Axes

Label.to-labelfield-16_bits*

Arithmetic Result* Ortho Slice

Properties

Result

Lattice Info: 1556 x 189 x 50, uniform coordinates

Data Info: label, 16-bit unsigned, min-max: 0...1519

Memory Size: 28.0 MB

Physical Size: 1555, 188, 49 [mm] from 0, 0, 0 [mm]

Voxel Size: 1 x 1 x 1 [mm]

Preview:

Master: Arithmetic

Image Data: NO SOURCE

Histogram: 0 1519

Shared Colormap: 1 8 Edit

auto-refresh Apply

Use "Arithmetic" to mask the dataset with all X-values ($A*i$)

Properties

Arithmetic

Input A: Label.to-labelfield-16_bits

Input B: NO SOURCE

Input C: NO SOURCE

Result Type: ☒ input A ☐ regular

Options: ☐ ignore errors

Result Channels: like input A

Expression: $A*i$

y (mm)

x (mm)

z (mm)

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File Edit Project View Window XPand Python XScreen Help

START PROJECT METROLOGY RECIPES SEGMENTATION MESHING FILAMENT ANIMATION REPORTING

Project View

Open Data...

Caption Snapshot Synchronize Ports Tcl Command Module

Convert Image Type Label.am Local Axes

Arithmetic Label.to-labelfield-16_bits* Result* Ortho Slice

Label Analysis Result.Label-Analysis*

Properties

Label Analysis

Data: Result

Intensity Image: NO SOURCE

Interpretation: ☐ 3D ☒ XY planes

Sequence Mode: ☒ Append ☐ Evol

Measures: BoundingBox

auto-refresh Apply

Apply "Label Analysis" selecting BoundingBox (Dx,DY,DZ)

Selection of measure groups

Choose a measure group: BoundingBox

Custom measures:

Name	Formula
BoundingBoxDx	Native
BoundingBoxDy	Native
BoundingBoxDz	Native

Measures selected in the group:

Name	Formula
BoundingBoxDx	Native
BoundingBoxDy	Native
BoundingBoxDz	Native

Native measures:

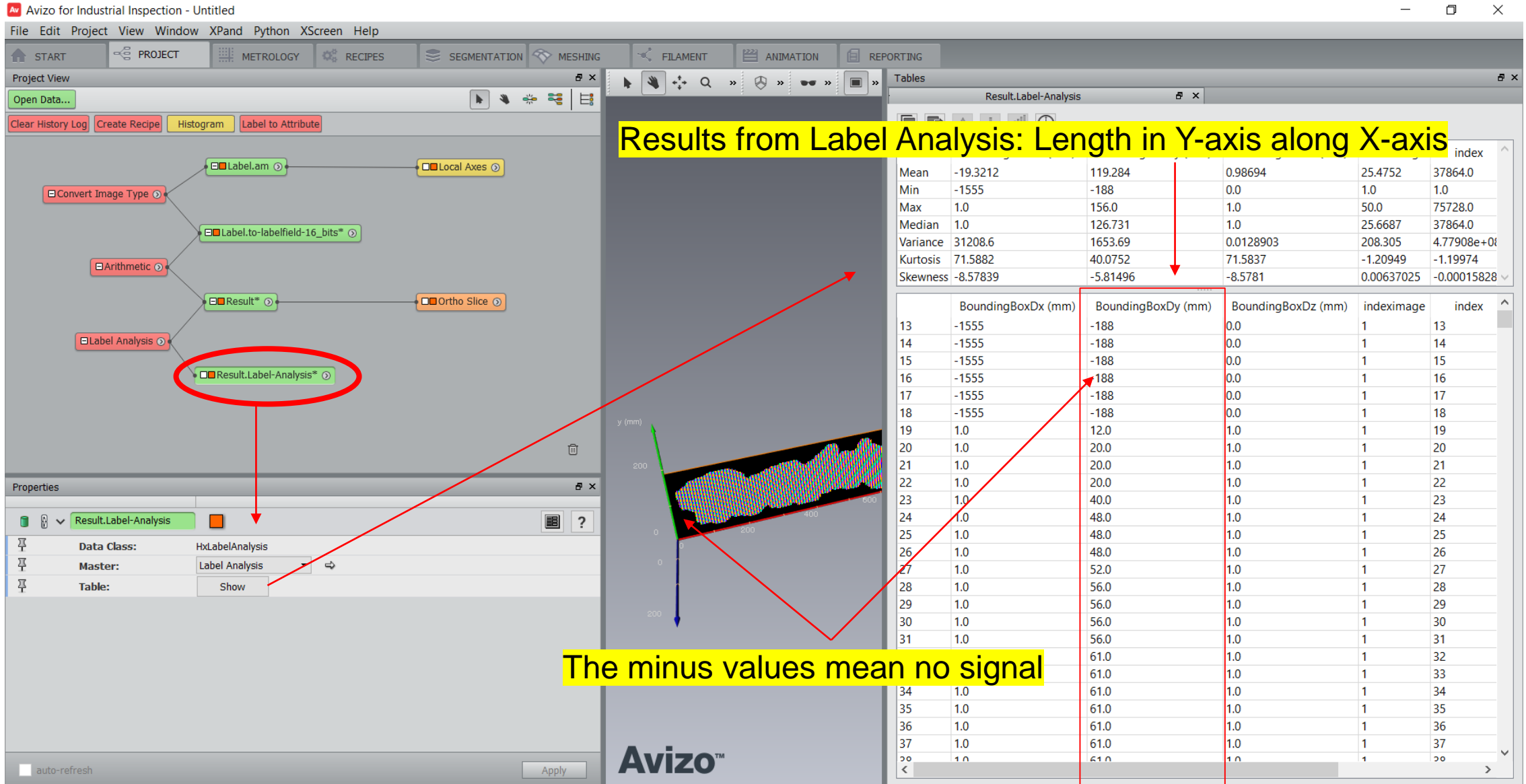
Name	Form
> Cooccurrence	
> Feret	

OK Cancel Help

Interpretation: XY planes

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BoundingBoxDx (mm)	BoundingBoxDy (mm)	BoundingBoxDz (mm)	indeximage	index	id
-19.3212	119.284	0.98694	25.4752	37864.0	757.43
-1555	-188	0.0	1.0	1.0	1.0
1.0	156.0	1.0	50.0	75728.0	1519.0
1.0	126.731	1.0	25.6687	37864.0	765.376
31208.6	1653.69	0.0128903	208.305	4.77908e+08	191163.1
71.5882	40.0752	71.5837	-1.20949	-1.19974	-1.19141
-8.57839	-5.81496	-8.5781	0.00637025	-0.000158288	-0.00561769

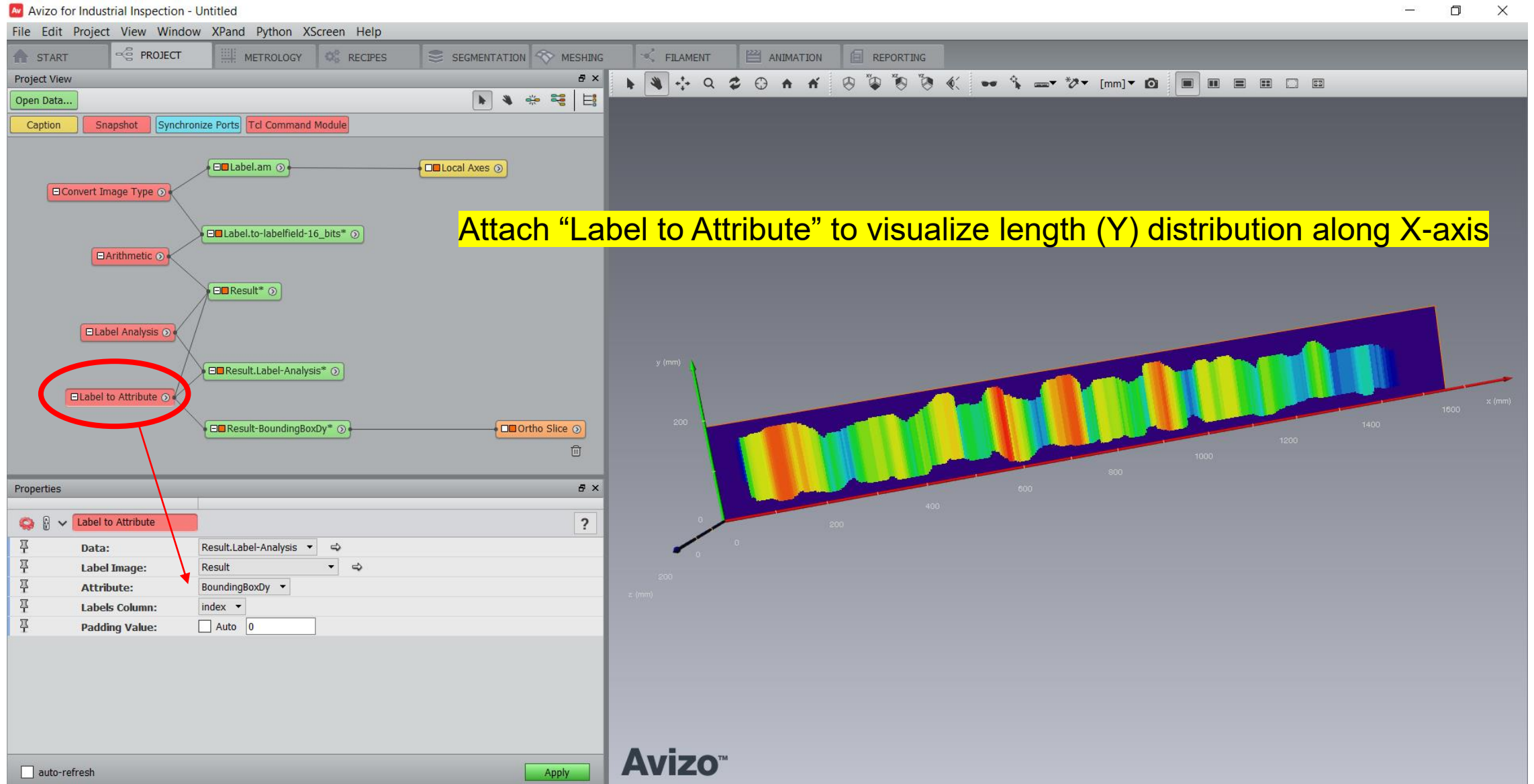
BoundingBoxDx (mm)	BoundingBoxDy (mm)	BoundingBoxDz (mm)	indeximage	index	id
1.0	56.0	1.0	49	74208	1502
1.0	56.0	1.0	49	74209	1503
1.0	48.0	1.0	49	74210	1504
1.0	48.0	1.0	49	74211	1505
1.0	48.0	1.0	49	74212	1506
1.0	48.0	1.0	49	74213	1507
1.0	32.0	1.0	49	74214	1508
1.0	32.0	1.0	49	74215	1509
1.0	32.0	1.0	49	74216	1510
1.0	32.0	1.0	49	74217	1511
-1555	-188	0.0	50	74218	1
-1555	-188	0.0	50	74219	2
-1555	-188	0.0	50	74220	3
-1555	-188	0.0	50	74221	4
-1555	-188	0.0	50	74222	5
-1555	-188	0.0	50	74223	6
-1555	-188	0.0	50	74224	7
-1555	-188	0.0	50	74225	8
-1555	-188	0.0	50	74226	9
-1555	-188	0.0	50	74227	10
1.0	7.0	1.0	50	74228	11
1.0	9.0	1.0	50	74229	12
1.0	12.0	1.0	50	74230	13
1.0	14.0	1.0	50	74231	14
1.0	18.0	1.0	50	74232	15

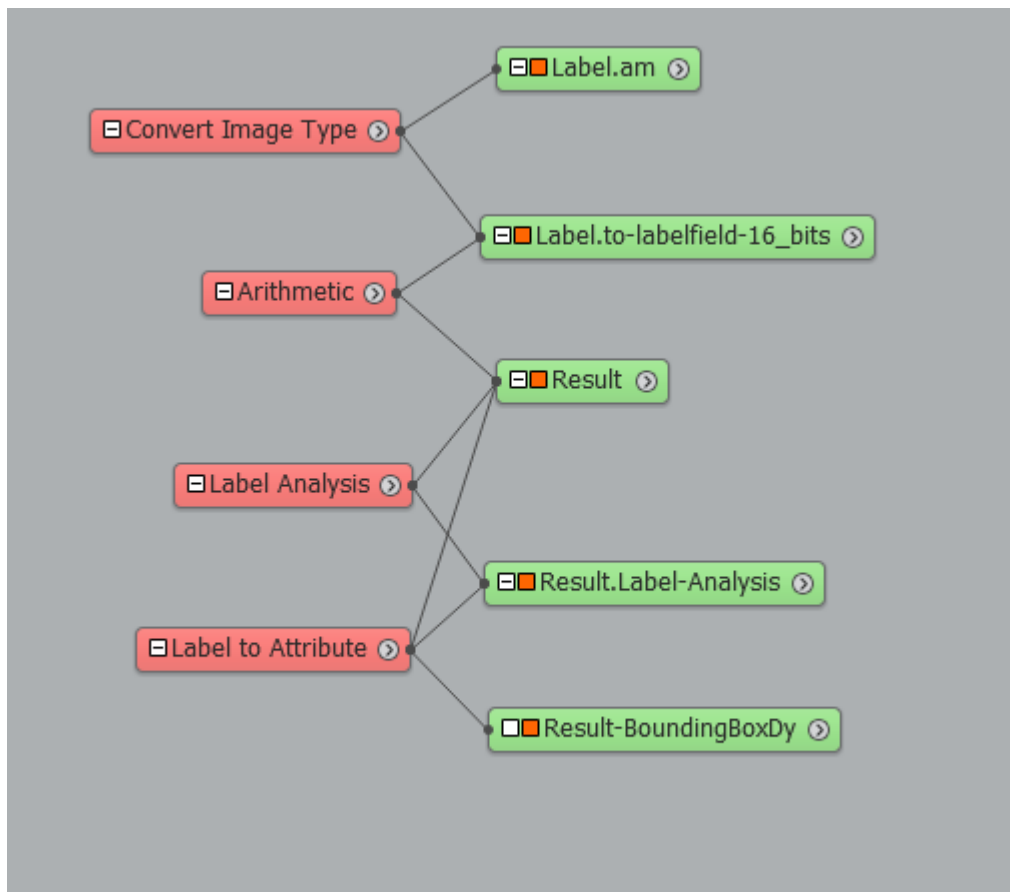
Global IDs (for all values)

Slice number (of total 50 slices in Z-axis)

Local IDs (for each Z-slice)

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How to create workflows and a Recipe

- Load Label.am (8-bit label)
- Convert Image Type to 16-bit label image
- Apply Arithmetic with the Expression: $A*i$
- Run Label Analysis: Create New Custom Measures
 - Select BoundingBoxDx, Dy, DZ
 - Interpretation: XY planes
- The results from Label Analysis showing lengths in Y-axis (BoundingBoxDy) along X-axis
- Use Label to Attribute to display Length Distribution
- Right click on the final result “Result-BoundingBoxDY” and choose “Create Recipe”, it will be re-directed to the RECIPES Workroom
- Save the Recipe



Thank You