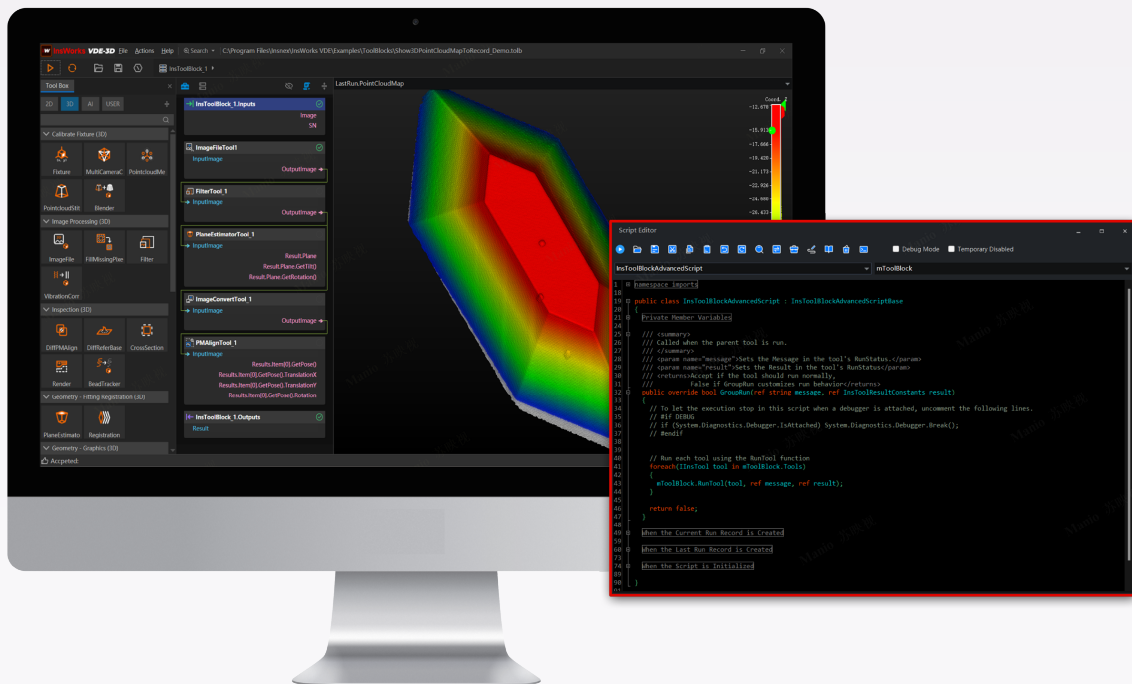


InsWorks VDE

POWER YOUR VISION ENGINEERING



SOFTWARE ADVANTAGES

InsWorks VDE faces the next visual application challenge together with you.

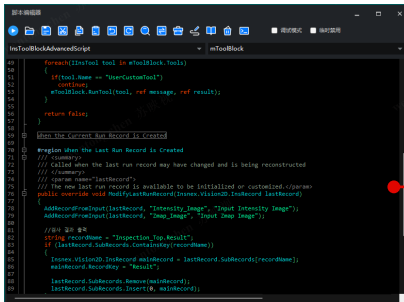
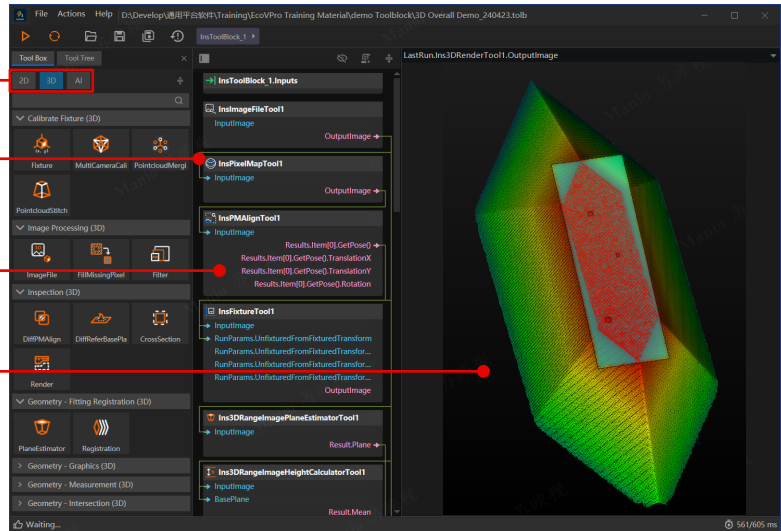
InsWorks® offers a complete visual image processing library and an intuitive, visual tool interface. With simple drag-and-drop functionality, you can rapidly build a highly flexible visual application system. We provide a mature and reliable **V**ision **D**evelopment **E**nvironment (VDE), covering all aspects of 2D, 3D, and AI image processing. Our thoughtfully designed, efficient programming interfaces help you quickly develop your custom visual software.

Self-developed Toolblock, a 2D, 3D, and AI model deployment tool

Graphical drag-and-drop visual task development, ready to use

Standard input/output ports, aligned API interfaces

Self-developed 2D and 3D graphic image display technology, supporting spatial coordinate trees



Supports script programming and VS debugging

SOFTWARE FEATURES



MODULAR TOOL DESIGN

Uses nested tool blocks to simplify and handle various visual application scenarios



EASY TO GET STARTED

Visual tools that are easy to master with basic computer operation skills



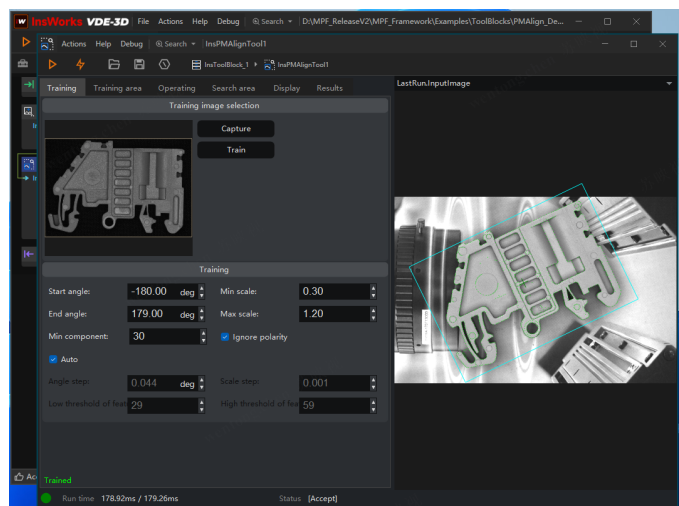
PROFESSIONAL IMAGE PROCESSING

Comprehensive image algorithm library covering 2D, 3D, and AI with outstanding performance



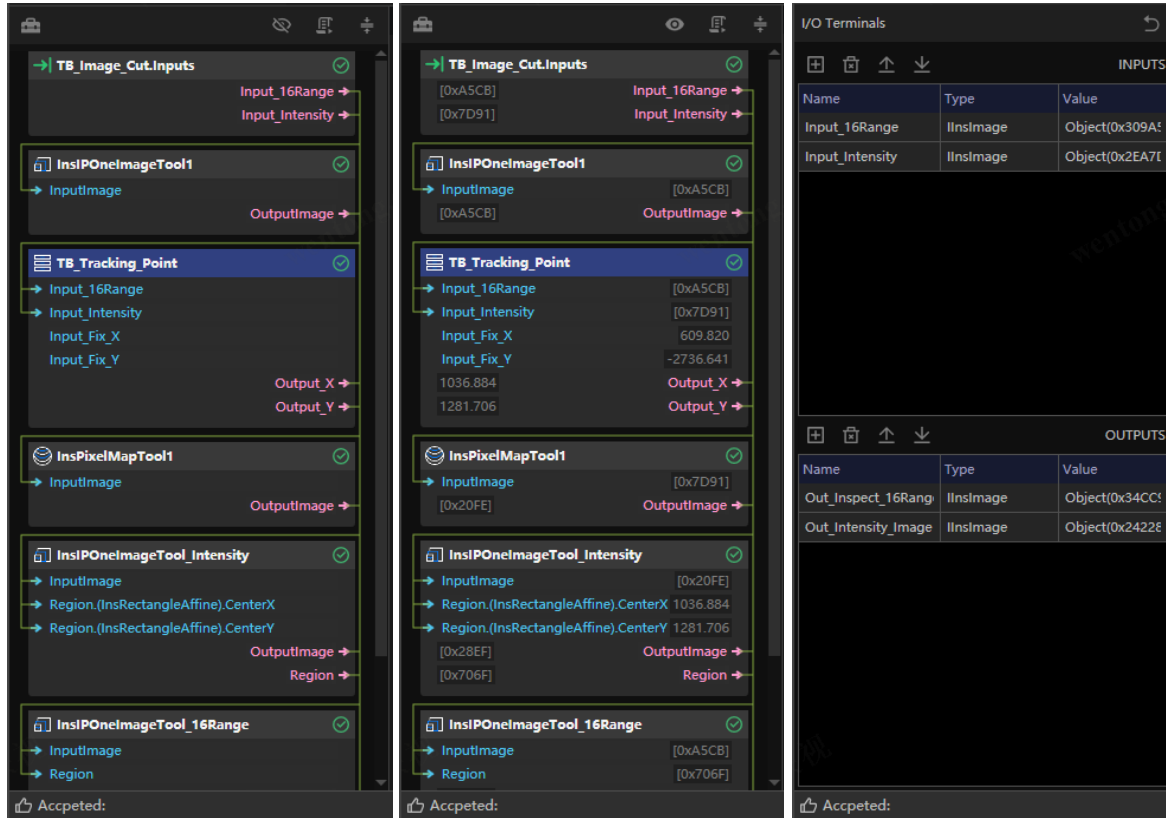
DEVELOPER-FRIENDLY

Provides a complete set of visual tool interfaces and graphic controls, with high customizability for users



QUICKLY BUILD VISUAL PROJECTS

Open the InsWorks.VDE.exe application to quickly enter the visual project design environment. Easily drag in camera acquisition tools, select the required image processing tools, and connect tool data outputs to other tool inputs. Tools can also be nested like building blocks to complete highly flexible visual algorithm processes. With efficient C# or Python scripts, you can easily customize tool execution logic, such as conditional branching, concurrent running, and defect detection. Actual application layer programs only need to run the tool blocks to obtain visual results, enabling rapid development of specialized visual software.



① Tool workflow diagram

② Terminal data value display

③ Input and output terminal editing

FEATURE 1: VISUAL TOOL WORKFLOW DIAGRAM DESIGN

Visualize tool flows, states, and data displays

FEATURE 2: CUSTOMIZABLE TOOL EXECUTION LOGIC

Efficient C# or Python scripts for quick implementation of conditional branching, concurrent execution, and defect detection

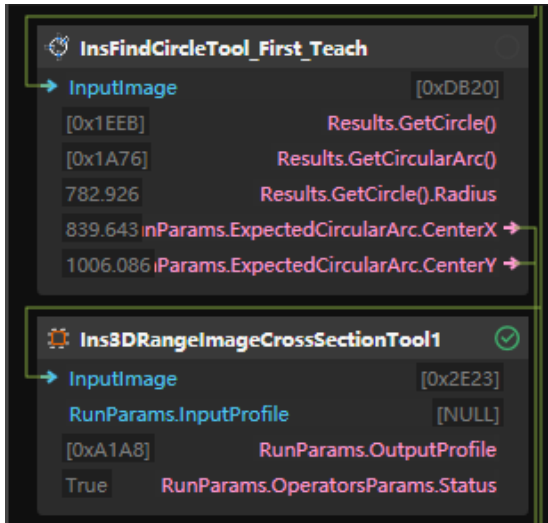
FEATURE 3: INTERACTION WITH EXTERNAL DATA

Fast data binding for visual tools, with tool block input and output data

SOFTWARE DETAILS

InsWorks VDE uses the .NET Framework for its interface layer, defining a highly flexible visual tool model and supporting native WPF and WinForm interface development. At the algorithm level, InsWorks employs C++ to implement a high-performance image algorithm library and a graphic interaction algorithm library.

SOFTWARE DETAILS



Real-time data binding and transmission model

VDE visual development library(Vision Development Environment)

.NET Framework Assemblies

Tool & ToolBlock

Tool Editors

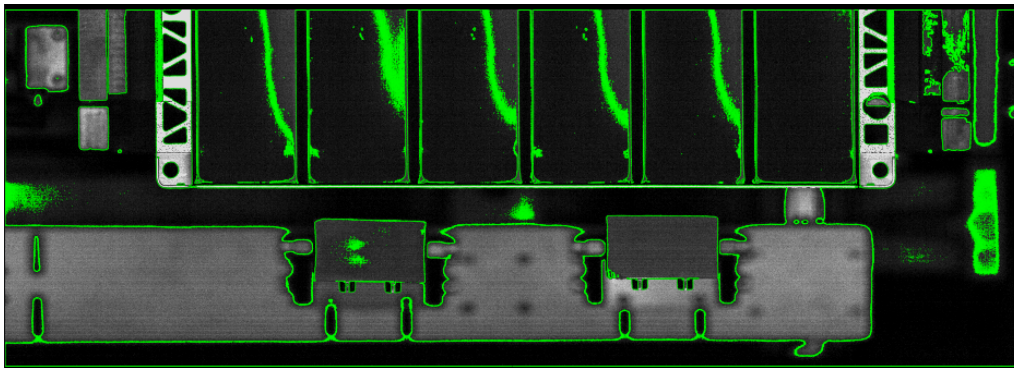
Graphics & Display

C++ Libraries

Image & Graphics base library

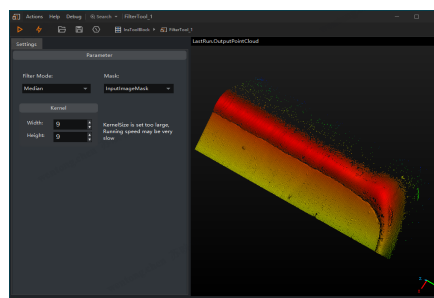
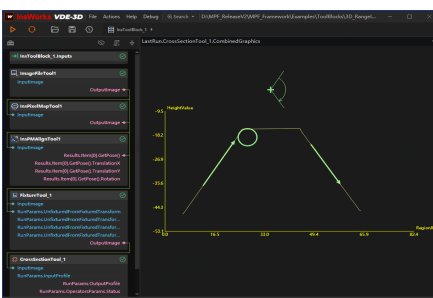
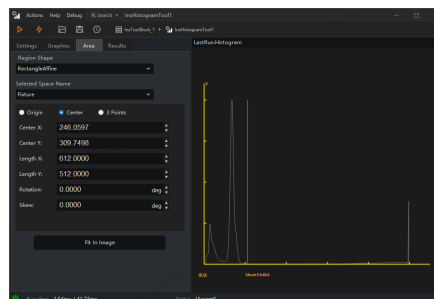
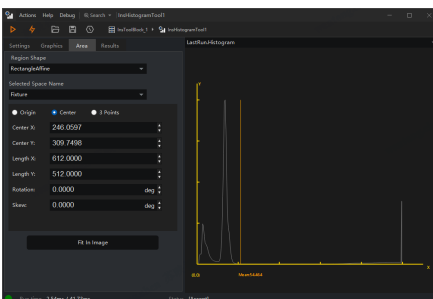
IMAGE RENDERING

Uses a high-performance image rendering engine to easily render over 40,000 contour data points



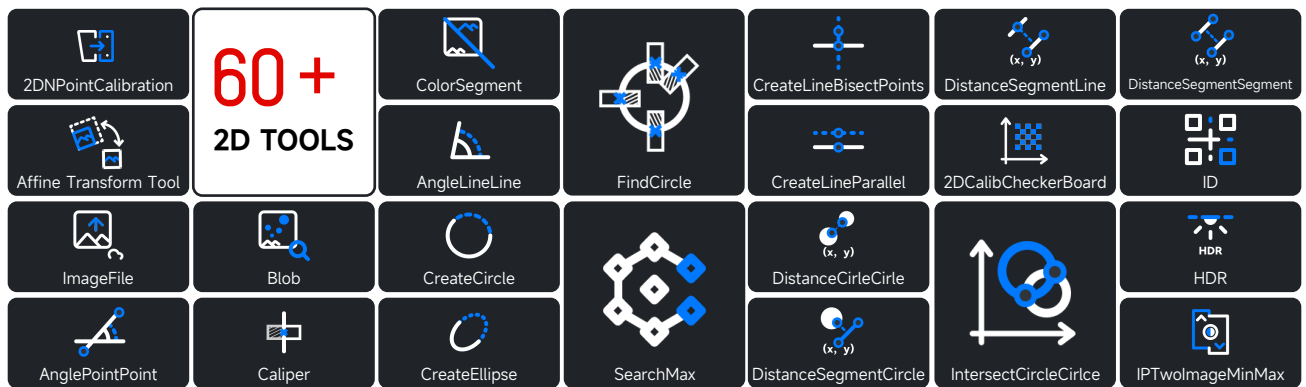
TOOL INTERFACE

Rich and diverse graphical interface presentations



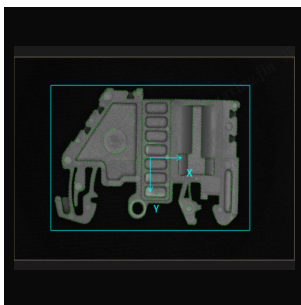
VDE-2D TOOLSET

The VDE-2D toolset includes all types of image processing algorithms used in traditional visual projects, such as image matching algorithms, edge detection algorithms, and advanced imaging algorithms.

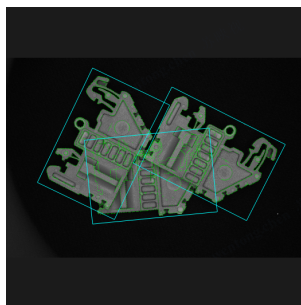


TEMPLATE MATCHING

Target finding, product positioning, quantity detection



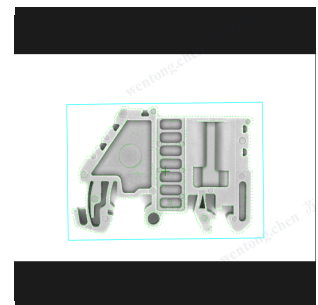
Training images



Multiple object overlap



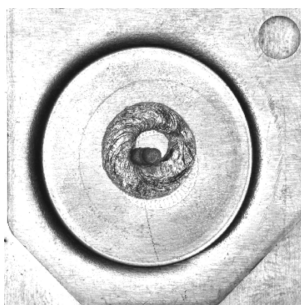
Complex background



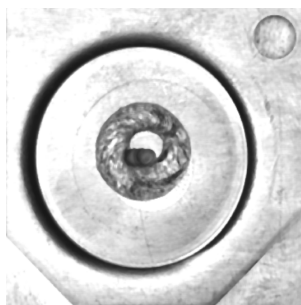
Highlighted background

IMAGE PREPROCESSING

Improve image quality and reduce noise



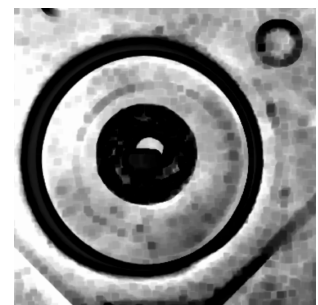
Before processing



Median filtering



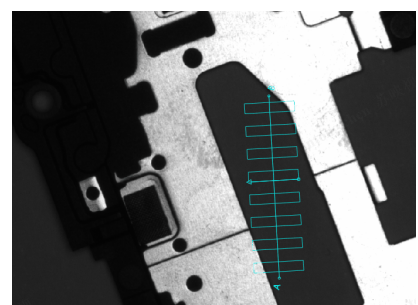
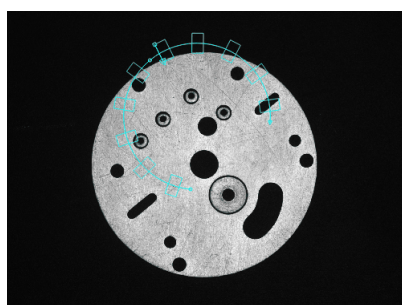
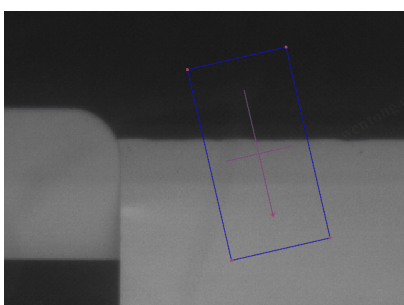
Pixel mapping



Morphological erosion

GRAPHICAL INTERACTION

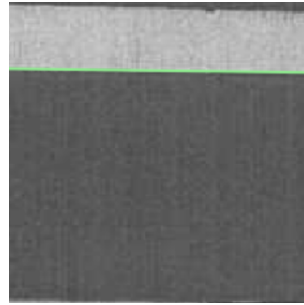
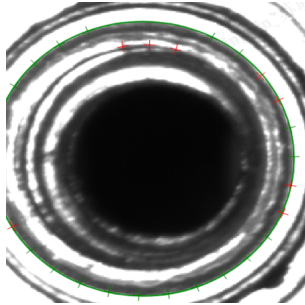
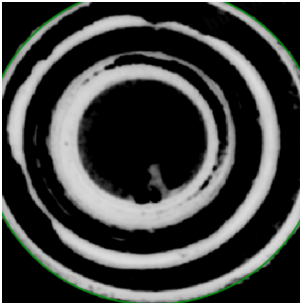
Easy-to-learn regional graphical interaction



VDE-2D TOOLSET

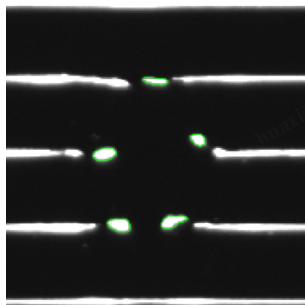
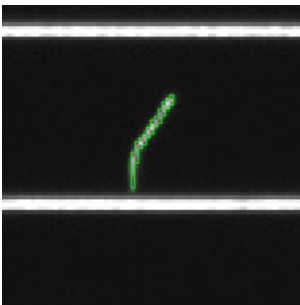
EDGE DETECTION

Line finding, circle finding, edge pair search



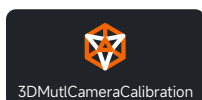
BLOB ANALYSIS

Quantity detection, surface inspection



VDE-3D TOOLSET

The VDE-3D toolset includes 3D point cloud and range image processing algorithms, point cloud matching algorithms, multi-camera calibration and stitching algorithms, surface defect detection algorithms, cross-sectional inspection algorithms, and more.



3DMultCameraCalibration

35 +
3D TOOLS



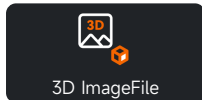
3DPointcloudStitching



CreateCylinder



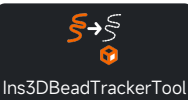
CreateSphere



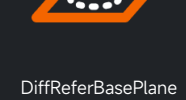
3D ImageFile



Fixture



Ins3DBeadTrackerTool



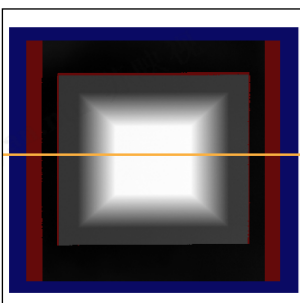
DiffReferBasePlane



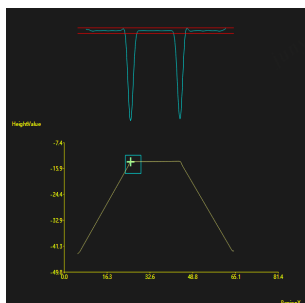
LineSphereIntersect

3D CROSS-SECTIONAL TOOL

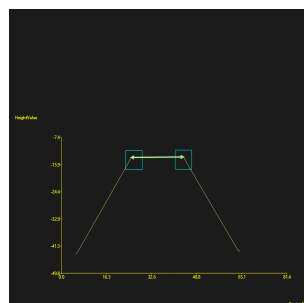
Obtain the vertical contour of a specified area on the X-Y plane of the range image, and perform contour feature extraction and measurement.



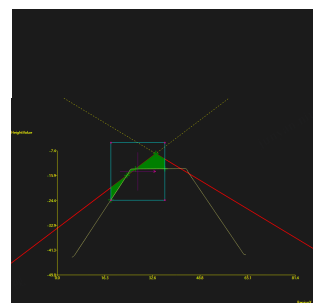
Cross-section



Corner extraction



Length calculation

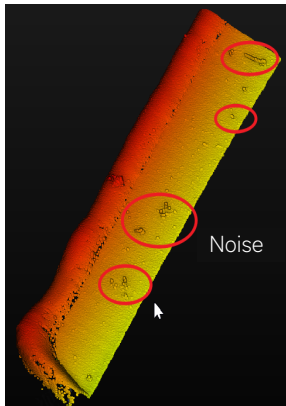


Area calculation

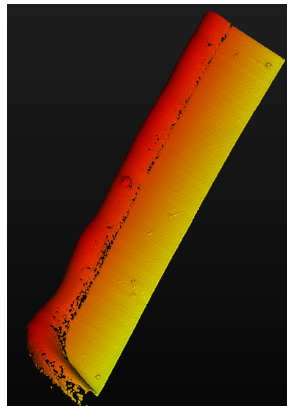
VDE-3D TOOLSET

3D FILTERING TOOL

Range image denoising



Before



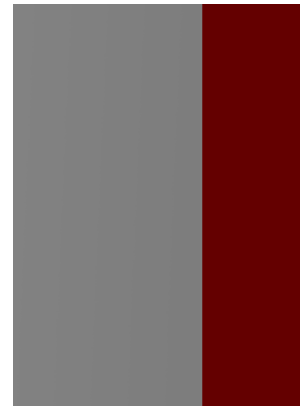
After Filter

3D MISSING PIXEL FILLING TOOL

Fill missing pixels in range images



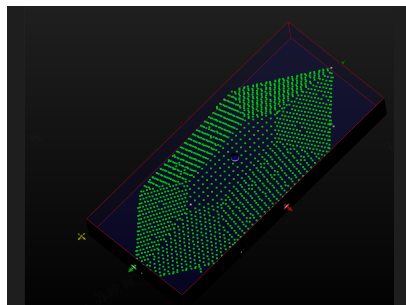
Before



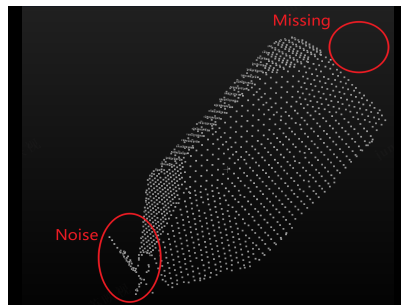
After Fill

3D POINT CLOUD MATCHING TOOL

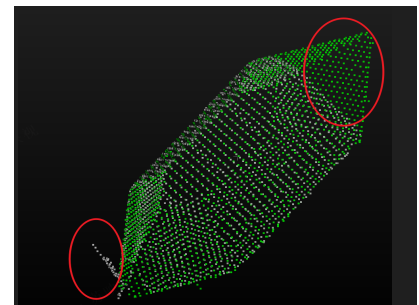
3D spatial positioning



Train



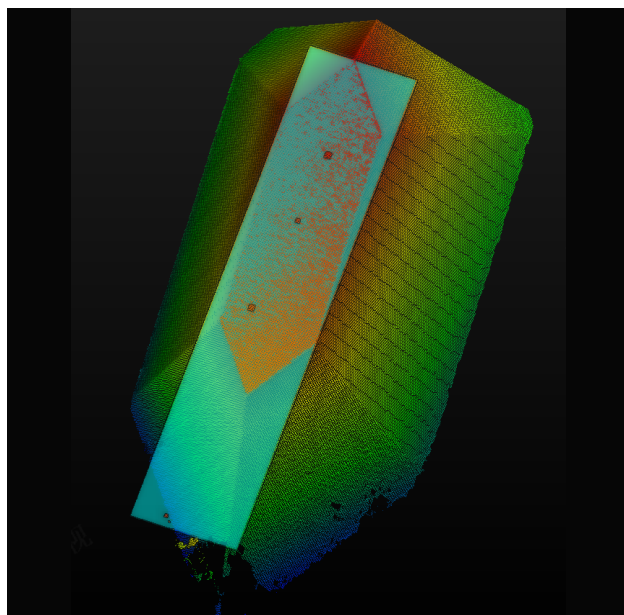
Runtime



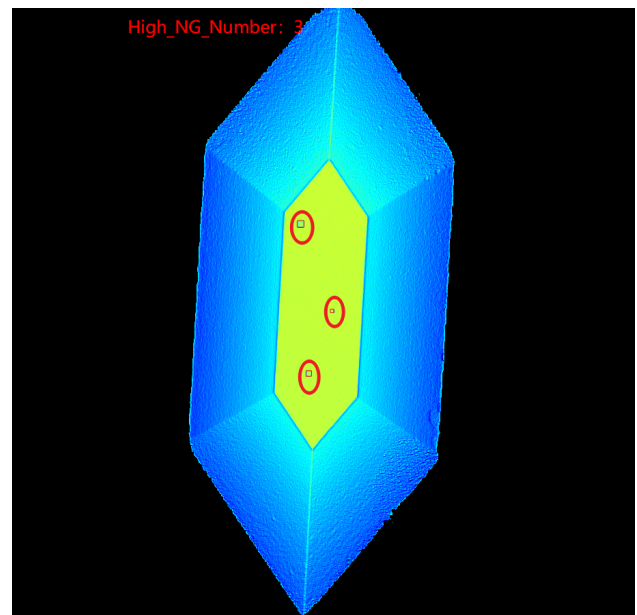
Result

3D SURFACE DEFECT DETECTION TOOL

Detection of protrusions and depressions on flat or curved surfaces of 3D objects



BasePlane

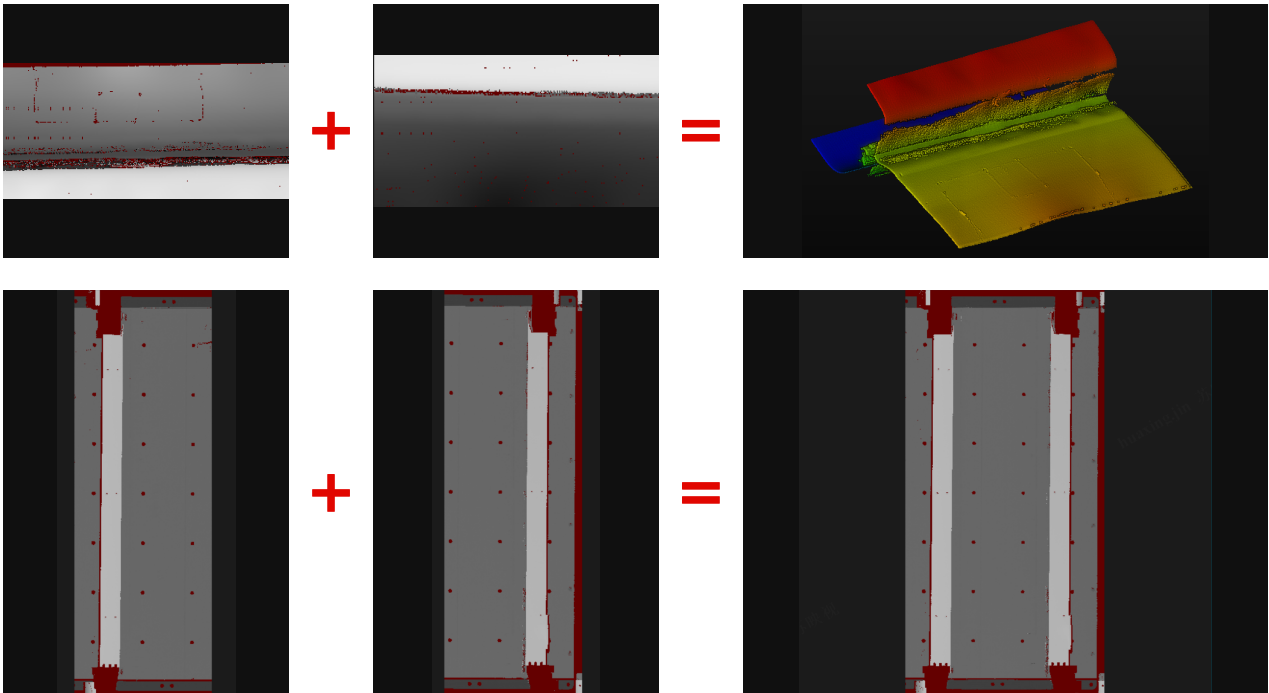


Result

VDE-3D TOOLSET

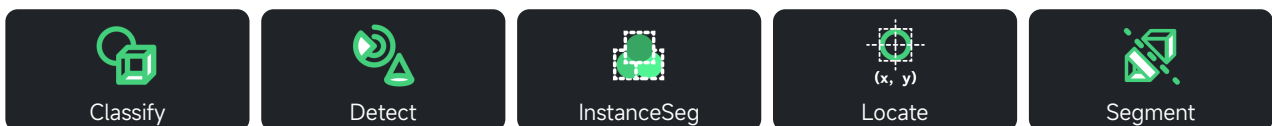
3D MULTI-CAMERA CALIBRATION TOOL / 3D POINT CLOUD STITCHING TOOL

Merge range images or point clouds from two or more cameras

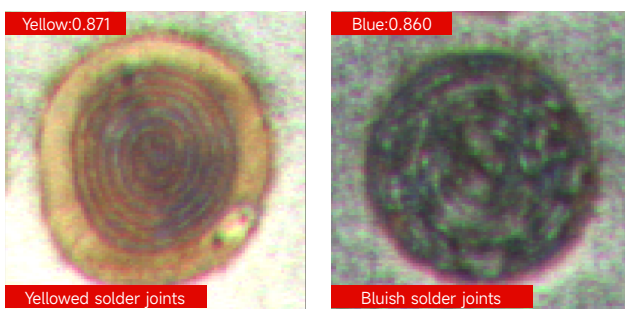


VDE-AI TOOLSET

The VDE-AI toolset seamlessly integrates with InsWorks ESAI software, suitable for tasks including localization, recognition, segmentation, and 3D detection, offering fast training and highly accurate results.

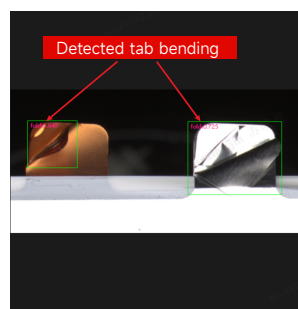


AI CLASSIFICATION TOOL EXAMPLE



Incremental learning technology, avoiding retraining the entire dataset with each new data entry

AI DETECTION TOOL EXAMPLE



Combines intelligent sampling and adaptive algorithms to generate precise results with no missed or false detections

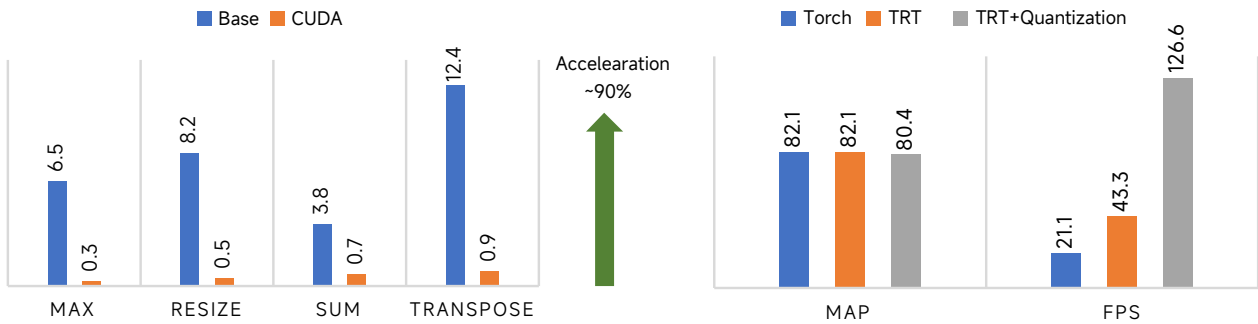
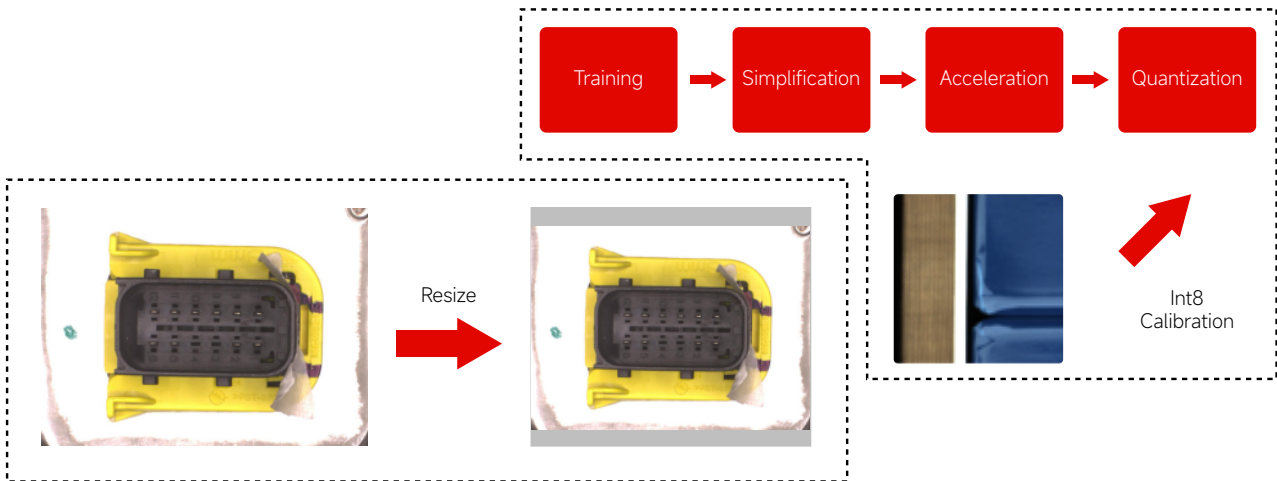
AI CHARACTER RECOGNITION TOOL EXAMPLE



Fast recognition speed, high accuracy, supports different hardware platforms (CPU/GPU)

ACCELERATED INFERENCE

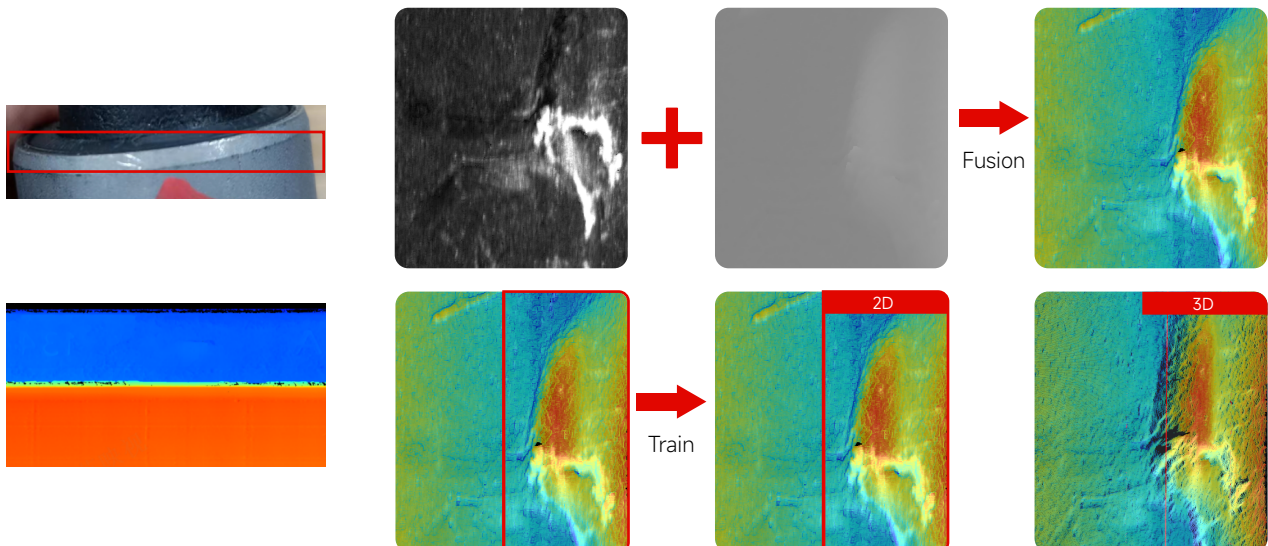
Based on GPU-accelerated inference, performs data calibration and quantization; speeds up by approximately 90% with less than a 5% decrease in model performance.



HW: CPU: i7-13700H GPU: 4060Laptop
Image Size: ~40w Pixels
Model size: small

3D + AI DETECTION

Combine 2D images with point clouds generated by our 3D algorithms, dynamically integrating both to achieve optimal training output. The image shows detection of small protrusions on the curved edges of automotive parts.



SOFTWARE OPERATING SPECIFICATIONS

INSWORKS VDE MINIMUM HARDWARE REQUIREMENTS

Graphical & Application Programming Interfaces		Visual C++ Redistributable for Visual Studio 2019, .NET Framework 4.7.2
Hardware & OS Requirements	CPU	Dual-core 2.00 GHz processor
	GPU	Integrated graphics (install the latest graphics drivers); for AI features, a dedicated graphics card is recommended. OpenGL version: 1.5
	RAM Memory	4 GB of RAM
	USB	One available USB port (for license dongle)
	OS	Windows 10 or later 64-bit operating system
	Storage	256 GB SSD or higher
Supported image file formats		PNG、BMP、TIFF、JPEG
Supported image properties		1-4 channels, 8 or 16 bits

INSWORKS VDE RECOMMENDED HARDWARE REQUIREMENTS

Graphical & Application Programming Interfaces		Visual C++ Redistributable for Visual Studio 2019, .NET Framework 4.7.2
Hardware & OS Requirements	CPU	Quad-core 3.7 GHz processor
	GPU	6 GB or more RAM, dedicated graphics card (install the latest graphics drivers), OpenGL version 2.0 or above
	RAM Memory	16 GB of RAM
	USB	One available USB port (for license dongle)
	OS	Windows 10 or later 64-bit operating system
	Storage	512 GB SSD or higher
Supported image file formats		PNG、BMP、TIFF、JPEG
Supported image properties		1-4 channels, 8 or 16 bits

Software Product Specification Sheet


InsWorks VDE							
	Version	Education Edition	45-Day Trial	Official-Base	Official-Plus	Official-Pro	Official-Max
Modules	2D Tools	✓	✓	✓	✓	✓	✓
	3D Tools	✓	✓	✗	✓	✗	✓
	AI Runtime Tools	✓	✓	✗	✗	✓	✓
	Scripting	✓	✓	✓	✓	✓	✓
Secondary Development		✗	✓	✓	✓	✓	✓
Validity Period		1 Year	45 Days	Permanent			
Licensing Method	No License Required		Software License	Dongle			
Acquisition Method	Official Website Registration & Download		Official Website Registration & Download & Request Activation Code	Sales Channels			
Usage Restrictions	No SDK Development		Time-limited Full Features	Unlimited			
Use Cases	Learning/Teaching/Personal Projects		Project Evaluation	Industrial Inspection/Automated Production			
Target Users	Students/Educational Institutions/Non-commercial Use		All User Groups				
Technical Support	Limited Support (Docs & Forum)			Full Support (Consulting/Training/Customization)			




DESIGNED FOR DEFECT IMAGING

If you have any testing needs,
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