



Intelligent Inspection

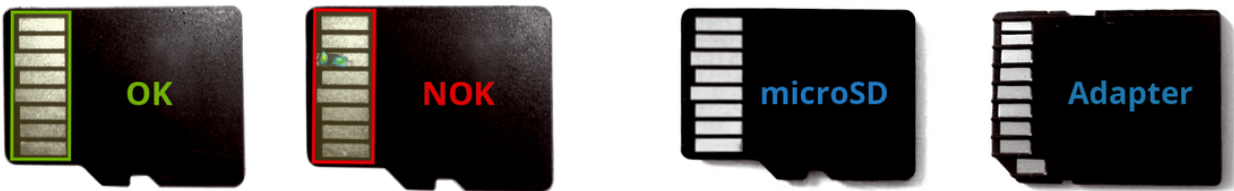
Solves complex machine vision applications with deep learning

SICK
Sensor Intelligence.

Advantages



Machine vision beyond traditional limits



AI Anomaly detection tool

The anomaly detection tool finds anomalies in the image and is suitable for complex applications with unpredictable defects. The application areas include inspections of surfaces or welded, glued or soldered pieces as well as injection mold tool inspection.

Training is done solely on good images, and the tool provides the result OK or NOK. It then also presents the detected defect on an anomaly heatmap.

The anomaly detection tool allows for fast and easy on-device application buildup with the capability to train up to 100 images directly on-device (or with the SICK AppEngine as emulator).

AI Classification tool

The classification tool sorts visually similar objects and is suitable for complex classification and sorting tasks of deformable, variable, organic and reflective material. Convenient for assembly verification and defect classification.

This tool is trained on similar amount of images from all classes and provides the object class that has been recognized somewhere in the image as a result.

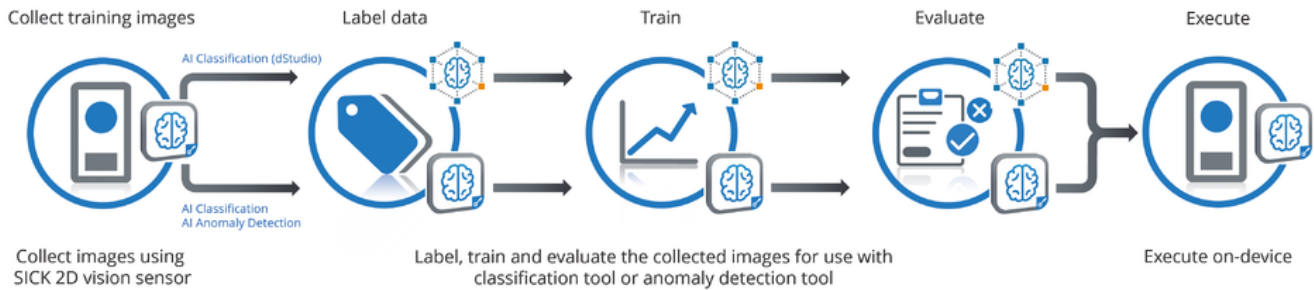
AI Classification supports on-device training, allowing quick and easy application buildup. Often only requiring a small number of images, AI classification can train directly on-device with up to 100 images.

AI Classification (dStudio) supports training using the SICK dStudio service for labeling, training and evaluation in order to generate an optimized neural network for increased accuracy and execution speed. With this solution, it's possible to train with more than 100 images.



Reduce waste and warranty claims and improve reliability and productivity

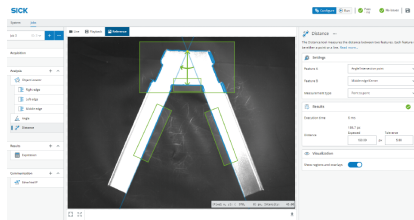
Fast and easy on-device application buildup. For optimized accuracy and execution speed of classification tasks, the labelling, training and evaluation can be done with SICK dStudio.



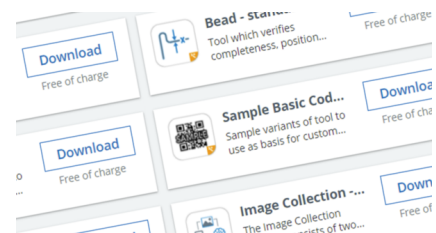
Combined benefits from traditional rule-based tools with deep learning side-by-side



The Intelligent Inspection toolset runs on supported SICK vision sensors and contributes to fast and easy on-device application buildup as well as optimized accuracy and execution speed thanks to training in SICK dStudio.



Traditional rule-based machine vision tools from Quality Inspection toolset are included, making it possible to use the benefits of the existing tool in tandem with deep learning capabilities.



Expand functionality with Nova plug-in tools available in the SICK AppPool or quickly create a custom plug-in tool with the SICK Nova plug-in API.



Technical data overview

Task	Training of neural networks for classifying images Presence inspection Quality inspection Classification Anomaly detection Measuring, 2D (depending on type)
Technology	Classification of images based on artificial neural networks 2D snapshot Image analysis Deep Learning (depending on type)
Language	English German French Italian Spanish Japanese Korean Chinese (depending on type)
Supported products	InspectorP series SIM1012 SIM1004 SIM2000 SIM2500 SIM4000 SICK AppEngine InspectorP61x InspectorP62x InspectorP63x InspectorP64x InspectorP65x SIM2x00 + picoCam2 / midiCam2 (depending on type)
Minimum screen resolution	1,366 px x 768 px
Supported browsers	Google Chrome (version 80 or higher)

Product description

The deep learning-powered Intelligent Inspection toolset of SICK Nova enables powerful anomaly detection and object classification that is not possible with rule-based machine vision. The combination of an example-based approach with on-device training and user-friendly interface paves the way for simplified solution development. The anomaly detection and classification tools ensure that inspected items fulfill required quality and sorting demands, which helps to improve yield, reduce waste and increase customer satisfaction. In addition, all traditional rule-based machine vision software tools from Quality Inspection toolset are included.

At a glance

- Inspection by deep learning technology
- Anomaly detection tool and classification tool
- Runs on supported SICK vision sensors
- On-device or dStudio-based labeling, training and evaluation
- Web user interface
- Traditional rule-based machine vision software tools included
- SICK Nova Tools plug-in support

Your benefits

- Deep learning solves complex machine vision applications where rule-based tools are insufficient
- Reduce waste and warranty claims and improve reliability and productivity
- Cost-efficient ownership as deep learning runs on device
- Fast and easy on-device application buildup as well as optimized accuracy and execution speed with training in SICK dStudio
- User-friendly and quick to learn
- Combined benefits from traditional rule-based tools with deep learning side-by-side
- Easily expand and customize functionality

Fields of application

- Complex classification and sorting of deformable, variable, organic and reflective material
- Defect classification
- Assembly verification
- Complex and unpredictable defect detection

Ordering information

Other models and accessories → www.sick.com/Intelligent_Inspection

Description	Type	Part no.
After taking out a dStudio subscription with a term of twelve months, up to three dStudio users can immediately unlock an unlimited number of trained models for commercial use. The subscription can be canceled at any time at the end of the term. Otherwise it is automatically renewed after twelve months for an additional twelve months.	Subscription (twelve months) for dStudio	1616973
Nova SIM 2D is a SensorApp for the SIM2x00 product family, which is connected to a picoCam2 / midiCam2 2D streaming camera. This type requires a Quality Inspection license or an Intelligent Inspection license. The Quality Inspection License provides a toolset which is used to ensure that produced items have the exact qualities regarding presence and measurements of details. The Intelligent Inspection Upgrade License makes it possible to productively use the complete set of tools, including powerful Deep Learning image analysis tools for solving problems which is not possible with rule-based machine vision. The Intelligent Inspection toolset is available with a trial period of 2 hours per reboot without license activated.	Nova SIM 2D	On request
The Intelligent Inspection License makes it possible to productively use the complete set of tools in a SICK Nova SensorApp. The Intelligent Inspection toolset includes powerful Deep Learning image analysis tools for solving problems which is not possible with rule-based machine vision.	Intelligent Inspection License	1128704
The Intelligent Inspection Upgrade License makes it possible to productively use the complete set of tools in a SICK Nova SensorApp, for which the Quality Inspection License has been previously activated. The Intelligent Inspection toolset includes powerful Deep Learning image analysis tools for solving problems which is not possible with rule-based machine vision.	Intelligent Inspection Upgrade License	1128698
The Nova InspectorP SensorApp includes the Quality Inspection Toolset and the Intelligent Inspection Toolset, which can be used with an upgrade license or for a test period of 2 hours per restart without an activated license. The Quality Inspection toolset is used to ensure that produced items have the exact qualities regarding presence and measurements of details. The Intelligent Inspection Upgrade License makes it possible to productively use the complete set of tools, including powerful Deep Learning image analysis tools for solving problems which is not possible with rule-based machine vision.	Nova InspectorP	On request

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

WORLDWIDE PRESENCE:

Contacts and other locations –www.sick.com