

Image recognition for your business

E-BOOK



INTRODUCTION

5 practical AI applications of image recognition

Image recognition: a look into the future

Artificial intelligence (AI) and machine learning (ML) are hotly debated topics within companies and will thoroughly transform almost every economic activity in the coming years.

One of the AI applications that has long captured the imagination is image recognition. In other words, image recognition. In this process, machines process images, analyze them and give meaning to them.

A complete solution for image recognition

In this white paper you will find 5 practical applications of image recognition in the daily processes of a number of sectors. In addition, we explain how the design of image recognition within one AI platform looks like in practice.



1. Quality control and inspection in the production and manufacturing industries

The production or manufacturing industry is the sector in which most applications with image recognition or computer vision take place today.

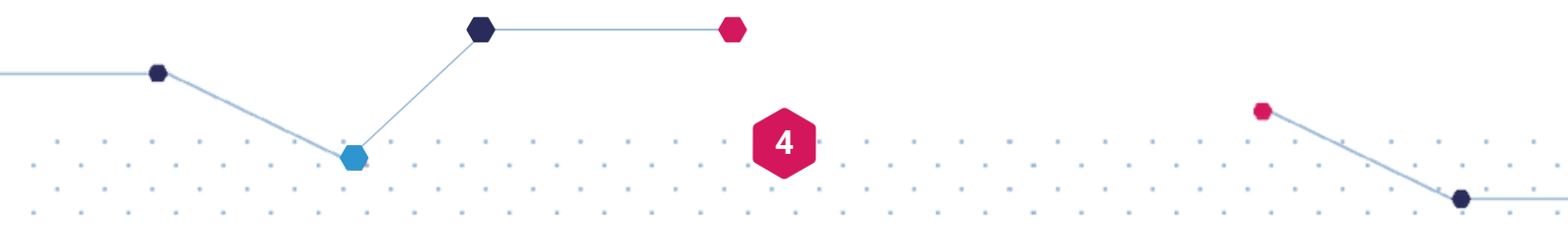
In this sector, the human eye was and still is, often called upon to perform certain controls. Among other things, for product quality. Experience shows that the human eye is not infallible and external factors such as fatigue have an impact on the results.

These factors, combined with the ever-increasing cost of labor, ensured that computer vision systems quickly gained a foothold in this sector.

Detecting abnormalities on a large scale with AI

Image recognition applications lend themselves perfectly to large-scale anomaly detection. Machines are trained to detect blemishes in paintwork, or to detect foods that contain rotten spots that cause them to fall short of the expected quality standard.

Another popular application is the check when packing various parts where the machine performs the check to assess whether each part is present.



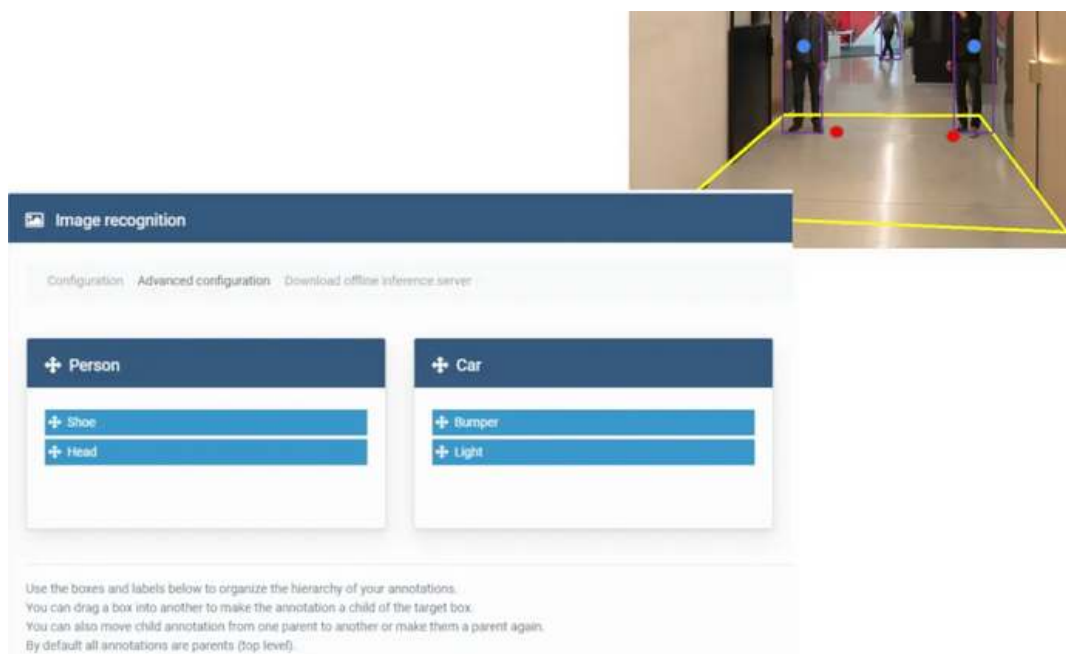
2. Applications in surveillance and security

Another application where the human eye plays an important role is camera surveillance. People constantly keep an eye on different screens, which requires permanent concentration.

Through image recognition, a machine is taught to recognize events, such as intruders who do not belong at a certain location.

Using AI to quickly detect or even prevent incidents

Apart from the security aspect around surveillance, there are many other uses under the broader umbrella of security. For example, it is possible to locate pedestrians or other weak road users on industrial sites to prevent incidents involving heavy equipment.



3. Asset management and project monitoring in energy, construction, rail or shipping

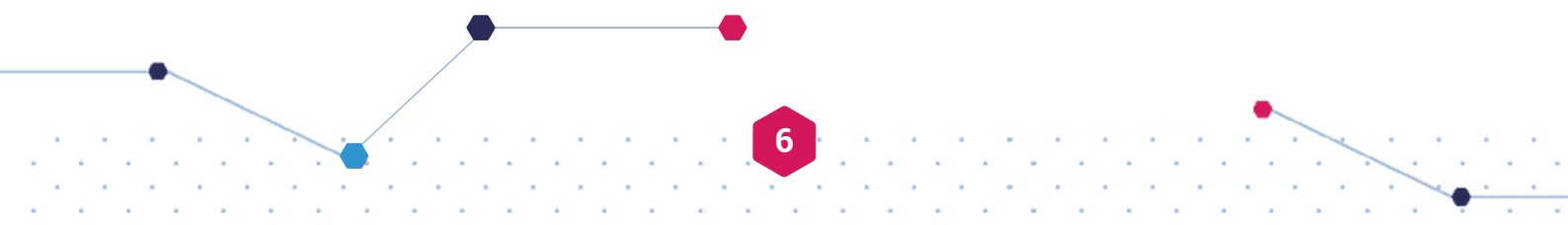
Large installations or infrastructure require immense efforts in inspection and maintenance. Often this is done at great heights or in other hard-to-reach places: underground or even underwater. Even small defects in large installations can escalate and cause major human and economic damage.

AI takes risky inspections off your hands

With AI, it is possible to train vision systems to take over these often risky inspection tasks. This way you can safely identify defects such as rust, missing bolts and nuts, damage or objects that do not belong where they are.

Predictive maintenance through combination of data sources

Mentioned elements from the image recognition analysis can be part of the data sources used for broader predictive maintenance cases. Combining AI applications not only maps the current state, but also predicts future defects or breakages.



4. Mapping health and quality of crops

Image recognition systems are also gaining ground in the agricultural sector. Crops are monitored for global condition. Or the type of insects are monitored and the degree of concentration of these insects. In this way, diseases can be predicted.

AI detects disease and prevents worse

More and more, this industry is using drone or even satellite images that map large areas of crops. Based on light incidence and shifts, invisible to the human eye, machines detect chemical processes in plants. Or they detect crop diseases at an early stage, allowing companies to take proactive action and avoid greater damage.



5. Automation of administrative processes.

In numerous administrative processes there is still profit to be made by automating the processing of orders, order forms, mails and forms. A combination of a number of AI techniques, including image recognition, can help here.

AI digitizes texts and interprets them

Optical Character Recognition (OCR) is a technique that is useful for digitizing texts. However, OCR lacks a smart component that gives meaning to the data.

AI techniques, such as named entity recognition, can then be used to detect entities in texts. But in combination with image recognition techniques, even more is possible. Think of the automatic scanning of containers, trucks and ships based on external entries on these means of transport.

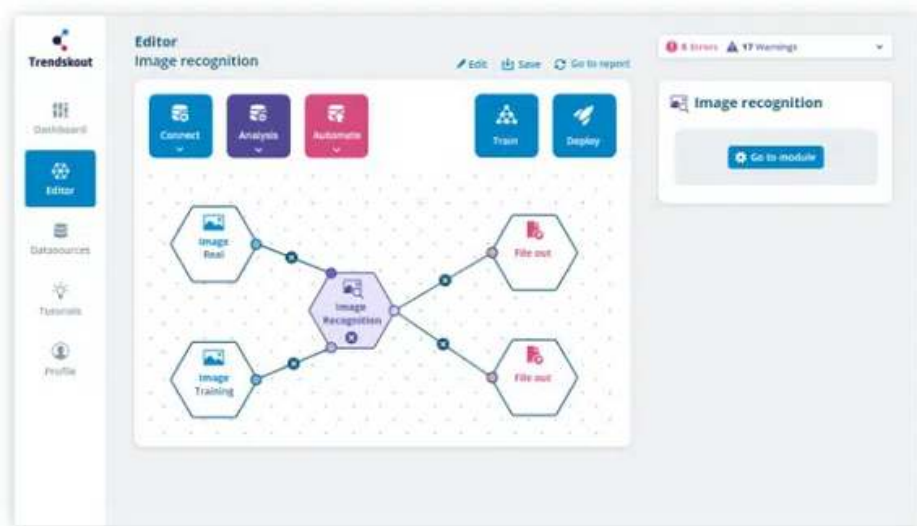


Image recognition for Arcadis

Arcadis is an international consulting and engineering firm specializing in infrastructure, buildings, environment and water.

With Trendskout's instantly usable AI software, an image recognition application was set up in barely a few days.

With this, Arcadis checks whether employees are actually wearing helmets, safety goggles and other safety clothing before entering a site.

This not only improves safety, but also greatly reduces follow-up and monitoring work, reduces the risk of insurance claims, and also creates the possibility of detecting whether other (face) clothing is being worn correctly.



Build state-of-the-art applications with one AI platform

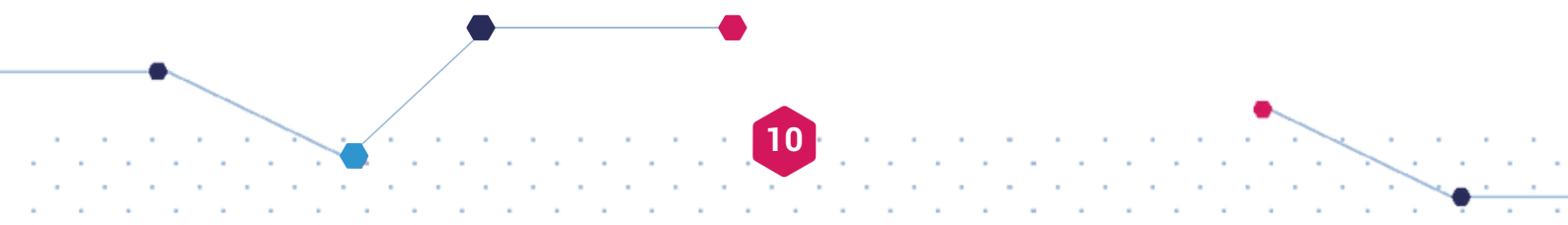
The technology behind image recognition applications has evolved tremendously since 1960. Today AI solutions deploy deep learning algorithms and convolutional neural networks (convnets).

Trendskout: 1 platform for business users and analysts

Within the Trendskout AI software platform we make it possible for non-data scientists to also build state of the art applications with image recognition.

In this way, as an AI company, we make the technology accessible to a wider audience such as business users and analysts. The Trendskout AI software makes it possible to set up every step of this process within the same platform.

Here we explain how that works in 4 steps.



Step 1 -Input of training data

We start by training the model , by uploading video and photo files. The Trendskout AI software automatically splits these into individual frames, which facilitates labeling in the next step.

Data quality is essential for good results

As with other AI or machine learning applications, the quality of the data is very important for the quality of the image recognition. The sharpness and resolution of the images directly impact the final result.

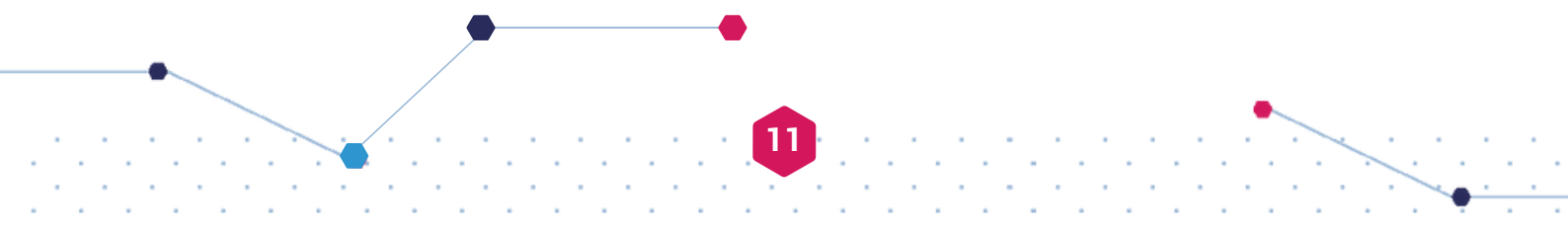
Remember, the harder something is to recognize for the human eye, the harder it is for AI as well.

Step 2 - Labeling or annotating the data

To recognize objects or events, we train the Trendskout AI software. We do this by labeling or annotating the objects that the computer vision system needs to detect.

Pointing out objects frame by frame with the help of labels.

To do this, we apply labels to those frames. Within the Trendskout AI software this is easily done via a drag & drop function. Once assigned, the computer remembers the specific label. We then go through all the frames of the training data and identify all the objects to be recognized.



Step 3 - Build and train computer vision or image recognition model

After entering, labeling and annotating the training data, we build the deep learning model. Our AI software does this by automatically searching for the best performing model. To do this, the software runs thousands of combinations of algorithms in the backend. This search takes several hours to days.

Determining accuracy and quality

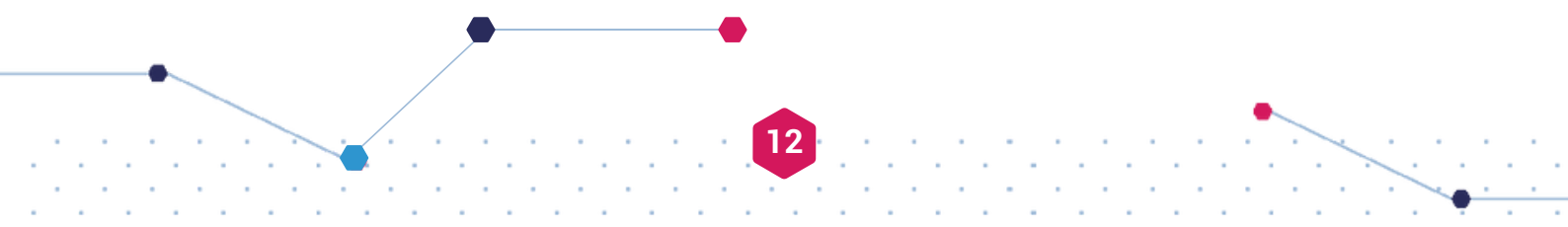
In addition, the software indicates the degree of accuracy and overall quality of the built model.

Step 4 - Putting the image recognition model to use

After training the model, it is ready for use. This requires a connection to the camera platform that provides real time video images. This can be done via the live camera input feature that connects to various video platforms via API.

Controlling related systems

The outgoing signal consists of messages or coordinates generated based on the image recognition model. This in turn can be used to control other software systems, robotics or even traffic lights.



Also getting started with image recognition for your business?

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Find out if image recognition adds value to your business!

**Free
Demo**

