NEURO-'T
NEURO-R

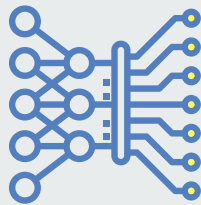**Deep Learning Vision Software**

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NEUROCLE is a company that provides Deep Learning Vision Software for non-experts.
As a group of computer vision and deep learning experts, Neurocle aims to make deep learning vision technology the norm in various fields including manufacturing, medical and logistics.

Our Vision	"Making deep learning vision technology more accessible"
Core Values	"More Accurate, Affordable, and Accessible"

Core Technology

Deep Learning

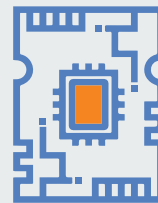### Computer Vision

Embedded

NEURO-T & NEURO-R

NEURO-T is a **no-code software** for training image-related deep learning models. With intuitive GUI and **Auto Deep Learning algorithm**, anyone can create the best performing deep learning models.
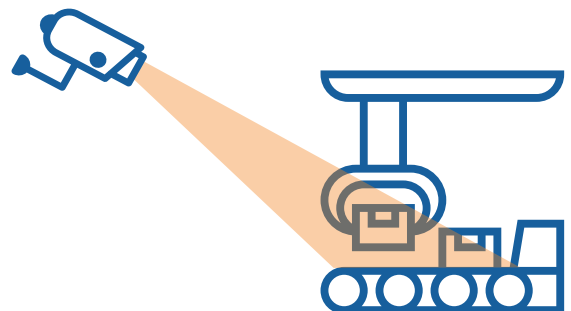
**NEURO-R** is a runtime that helps with model deployment, supporting **optimized integration** with various inference platforms including GPU and **embedded processors.**

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Image — TRAIN — Model

NEURO-R

No-code deep learning software that enables non-experts to easily create model	Runtime API that can be easily integrated into existing system (compatible with C# and C++)

Deep Learning Technology
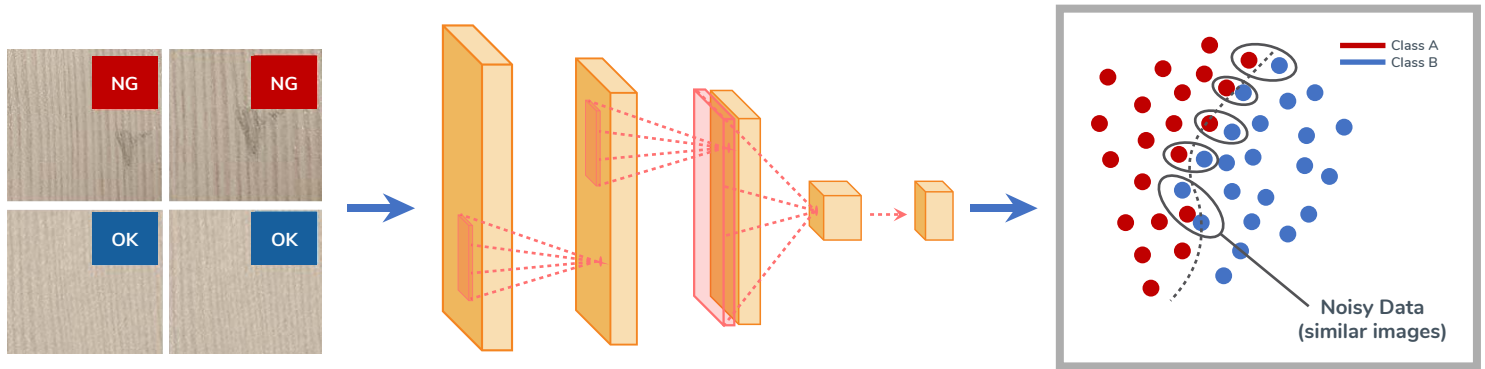
Interpret new image data automatically based on trained deep learning model
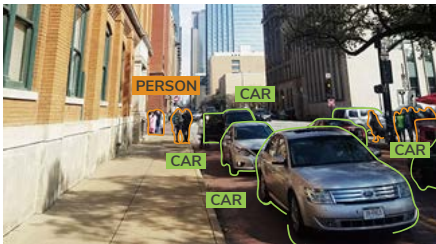
Deep Learning Model Types in Neuro-T

Classification model evaluates the image as a whole, identifying the class an image belongs to among a provided list of classes.

Use Cases : **Medical image classification**	Analysis unit : **Image**

Segmentation model recognizes an object, its shape, and location within an image. It is perfect for locating the exact defect area, or for discovering multiple types of objects within the image.

Use Cases : **Product surface inspection**	Analysis unit : **Pixel**

Detection model detects instances of certain objects within the image. It shows size and location of the object in a bounding box format and distinguishes its class.

Use Cases : **Face detection**	Analysis unit : **Object**

OCR is specialized in recognizing texts in the images. This model can detect text from the image and recognize each characters within it.

Use Cases : **Bar code, Scanned document**	Analysis unit : **Character**
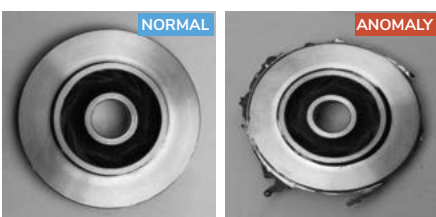
Anomaly Detection model identifies outliars and captures rare items or observations that differ significantly from the majority of the data.

Use Cases : **Normal/Defect part inspection**	Analysis unit : **Image**

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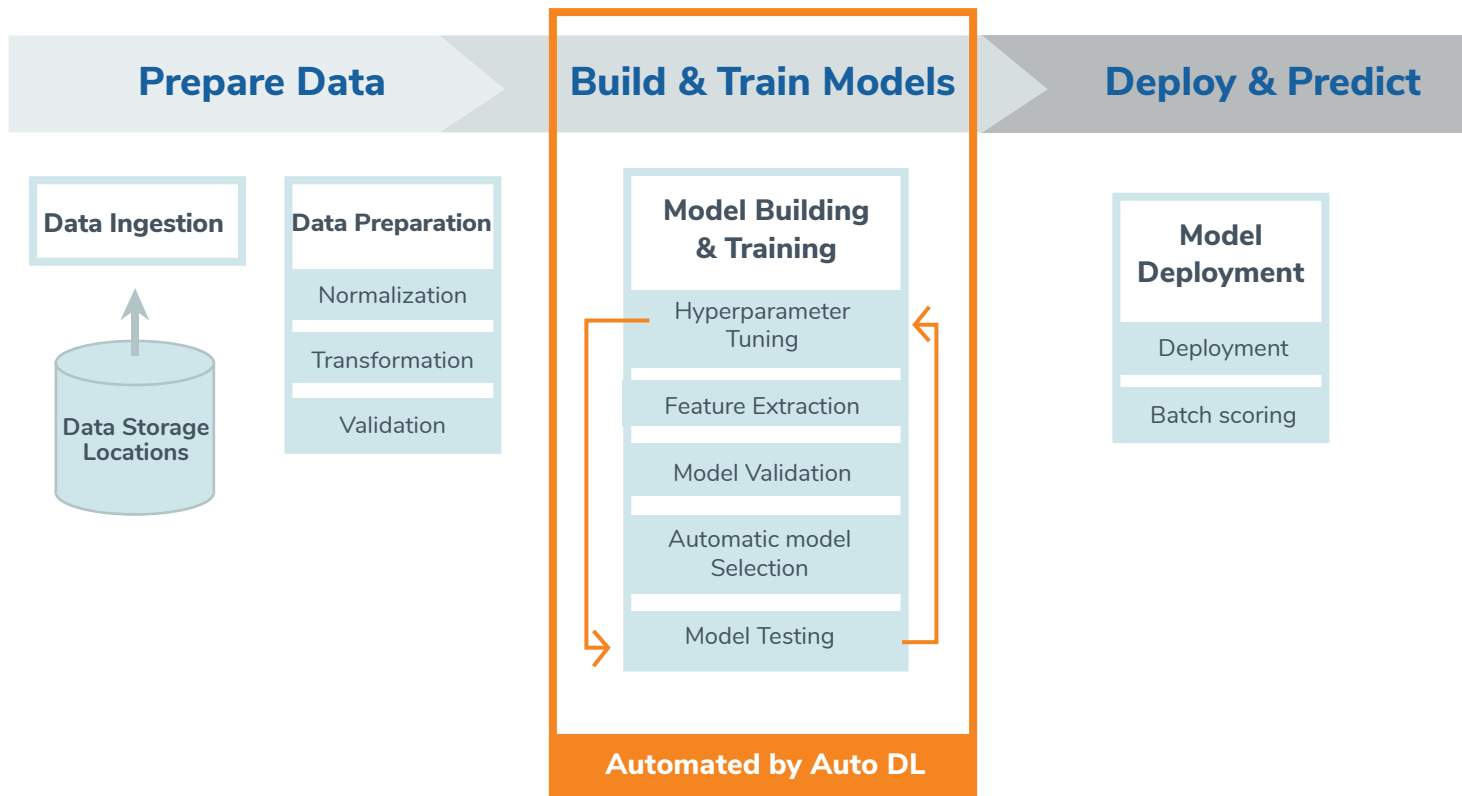# Auto Deep Learning Algorithm

Auto Deep Learning (Auto DL) algorithm is a unique algorithm of Neurocle. It self-discovers the optimal deep learning structure and set of hyperparameters. With Neuro-T's Auto DL algorithm, Neuro-T users, including a novice, can create the best-performing model without going through re-training, saving precious resources.

Prepare Data

Data Ingestion

Data Storage Locations

Data Preparation

Normalization

Transformation

Validation

Build & Train Models

Model Building & Training

Hyperparameter Tuning

Feature Extraction

Model Validation

Automatic model Selection

Model Testing

Automated by Auto DL

Deploy & Predict

Model Deployment

Deployment

Batch scoring

Create the best-performing model with one click

Benefits of Auto DL

Nonexpert-Friendly

End users can exploit their own domain expertise

Increase visibility of project details for non-experts

Fast Deployment

Re-training process is not required

No need to go through third party contractors

Resource Efficient

Deep learning experts are not required

Save engineering resources used for parameter tuning

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Neuro-T Workflow

Neuro-T streamlines the process of building a deep learning model, from image collection to model evaluation and report generation.

Process for Deep Learning Project

Collect Data	>	Data Management	>	Model Creation	>	Model Evaluation	>	Report

FILE Tab	>	DATA Tab	>	TRAIN Tab	>	EVALUATE Tab	>	REPORT Tab
Import Image		Image Labeling Set Splitting		Auto-creation of optimised model		Check Results & Compare Models		Create a report

Auto DL replaces re-training process

Features

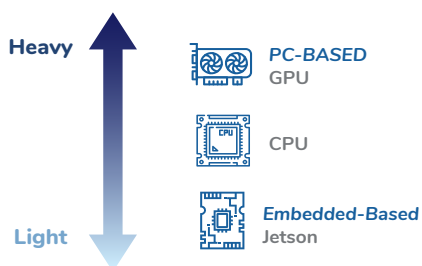Worker1 | OK | NG | NG
Worker2 | OK | OK | NG
Labeling Noise

Easy labeling comparison

Advanced Data Management System

Easy maintenance of existing models with data management system

Enhance your model performance with an advanced data management system that helps compare and analyze data and training results.

License 1

Local Server PC

Client PC | Client Laptop | Client Tablet PC
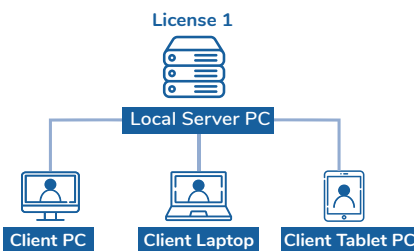
Real-time Collaboration

Server-Client Architecture

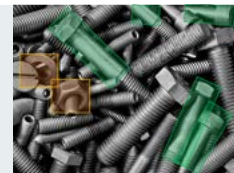*Keep confidential data in local server while collaborating with others*

Share your project with internal and external collaborators and access projects from any device using the local cloud server (on-premise environment) provided by Neuro-T.

Heavy

PC-BASED GPU

CPU

Embedded-Based Jetson

Light

Various Inference Platforms

Flexible Inference Platforms

Lightweight models optimized for Embedded processors

Create and deploy models optimized for each platform. Lower the infrastructure cost with embedded-based models while enhancing processing speed.

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Applications

Manufacturing

Logistics

Applicable Industries

Neuro-T is a general-purpose software of which usage is not limited to specific industries. These are some examples of the industries our client companies have been involved in; however deep learning vision technology has unlimited potential use cases.

Medical

Agriculture

Security
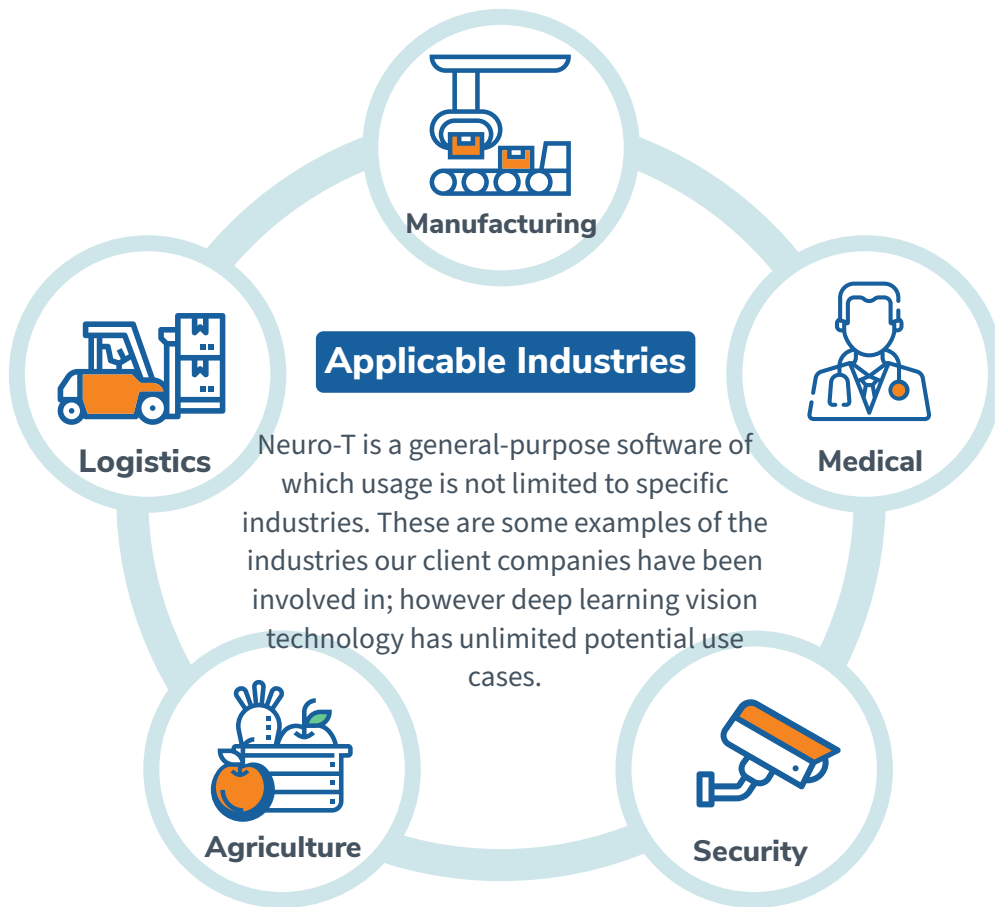
Manufacturing
Quality control process would be faster and more accurate with less resource inputs, thus improving the manufacturing process drastically.

Medical
Within the biomedical industry, a variety of medical imaging —CT, X-ray, and MRI— could be processed rapidly, allowing for early and accurate diagnosis.

Logistics
Using deep learning driven OCR, companies can increase accuracy and speed of information management as well as enable system automation.

Security/Defense
Real-time image processing elevates accuracy, speed, and coverage of target recognition for airport security checks, CCTV and national defense.

Agriculture
In the agriculture industry, automated crop cultivation and yielding could increase both cost and resource efficiency for large farms.

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License Overview

Neurocle's products are available in a variety of license types to best meet the needs of your organization. For every purchase, you can choose the license type which suits you best based on the number of user accounts and maximum number of GPUs required for your project.

Types of Licenses			Number of Accounts	Max. Number of GPU
Neuro-T		Basic	1	4
		Standard	3	4
		Advanced	6	8
		Premium	12	16
Neuro-R		Embedded	N/A	1
	PC	Single		1
		Multi		4
		Unlimited		unlimited

* Neuro-T and Neuro-R provide an on-premise environment.
* Neuro-R PC versions (single, multi, and unlimited license) support both PC and embedded platforms.
* Neuro-R license should correspond with the number of GPUs available on your inference device.

Requirement Specifications

			Minimum Specifications	Recommended Sepecifications
Neuro-T	Server	CUDA Compute Capability	3.5 or higher	RTX 2080 Ti
		GPU Memory	8GB or higher	
		O/S	Windows 10, Windows Server 2016	
		CPU	i5 (6th Generation) or higher, Xeon E5 or higher	• Single GPU: i7 (9th Generation) • Dual GPU: Xeon E5-2640 v4 • 4+ GPU: Additional CPU required
		RAM	16GB or higher	32GB or higher
	Client	Browser	Chrome, Microsoft Edge, Firefox	
Neuro-R	PC	CUDA Compute Capability	3.5 or higher	RTX 2080 Ti
		GPU Memory	2GB or higher	
		O/S	Windows 10, Windows Server 2016, Linux Ubuntu 18.04 amd64	
		Development Environment	Visual Studio 2010 or higher	Visual Studio 2015
	Embedded	Available Platform	NVIDIA Jetson all series	
		O/S	Linux Ubuntu 18.04	

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As a group of computer vision & deep learning experts, Neurocle believes that innovation in deep learning can enhance the quality of life.

Our vision is to enable people to apply deep learning technologies to everywhere they like with easy-to-use software. No matter who the users are and what kind of system they use, we help people solve deep learning image problems.