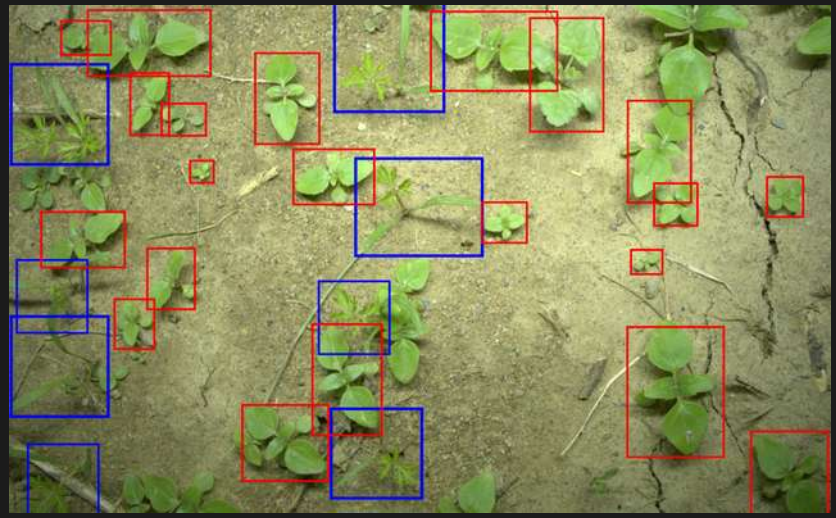
Seeing What Matters

GRÜNSPECHT
Vision

AI Is a Game Changer

And Has Been for Longer Than You Think



Weed Detection – Unsolvable with classical methods

Logistics – No CAD models, real-time classification, infinite variety

For computer vision, AI is not a trend to ride. It is a trajectory we have been on for decades.

What changed: Better tools, cheaper hardware, and a dramatic expansion of solvable problems.

A 13-Year-Old Can Train a Model

Meet Charlotte, our student intern – thirteen years old – within a few days she produced working AI models.

Frameworks, pre-trained backbones, annotation tools, one-click training pipelines – the barrier to building an AI model has essentially collapsed.

So what exactly are you paying a specialist company for?

So What's Left to Do?

The value has shifted. It is no longer in the model.

Getting the right image
Optics, illumination, geometry

Deploying in a real factory
Three shifts, no downtime tolerance

Integrating with infrastructure
PLCs, MES, IT landscapes

Speaking the customer's language
Defect catalogs, shared vocabulary

Think Like a Photographer, Build Like an Engineer

Think Like a Photographer

Understand light, contrast, angle, and depth of field.

What makes a defect visible to a sensor before any code runs?

A photographer shapes the scene. The same discipline applies to industrial imaging.

Build Like an Engineer

Thermal management, vibration, IP ratings, integration into real factory environments.

Engineer the collaboration: We bring vision expertise. The customer brings domain knowledge.

Defect catalogs, shared vocabulary, clear pass/fail criteria – without speaking the same language, the prettiest pipeline solves the wrong problem.

This is the foundation everything else rests on.

The Imaging Pipeline

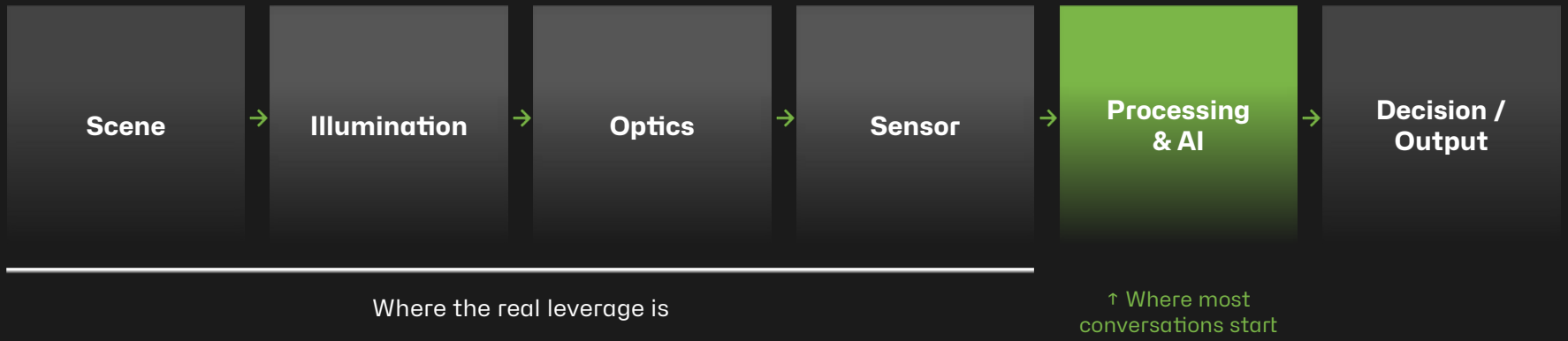
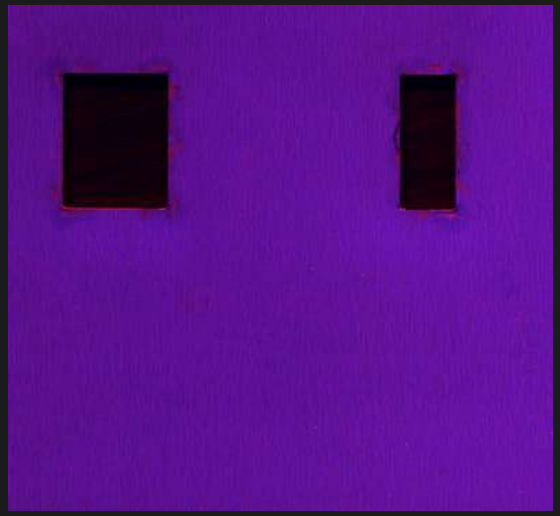
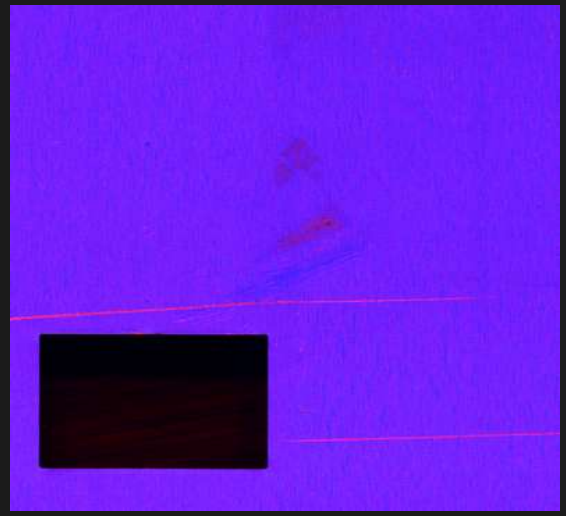


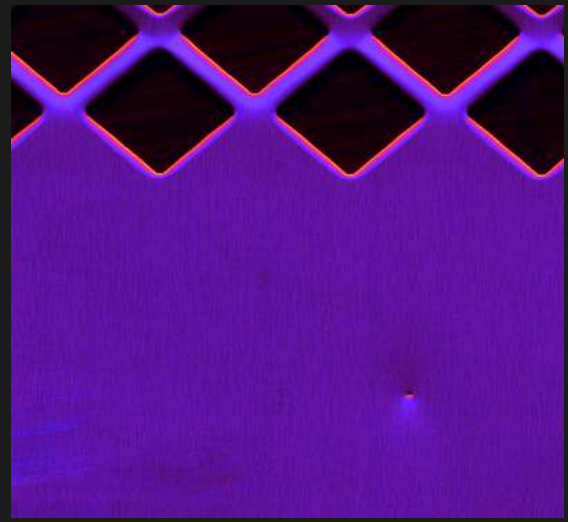
Image quality entering the algorithm is the single biggest determinant of system success.

Making the Invisible Visible

Fuel Cell & Battery Inspection | Combined Bright-Field / Dark-Field Illumination







If the defect is not visible in the image, no amount of AI will find it.

Reflective layers, thin coatings, micrometer tolerances – the engineering decisions determined success before any code was written.

Edge Processing: Fitting Into the Real World

PICUS Edge AI Platform

Not just latency
It is about organizational reality. Every customer's IT landscape is different.

Zero risk to existing systems
No server installations, no security reviews, no breaking what already works.

Minimal downtime
Self-contained device. Connects to camera and PLC. Delivers results. Doesn't touch anything else.

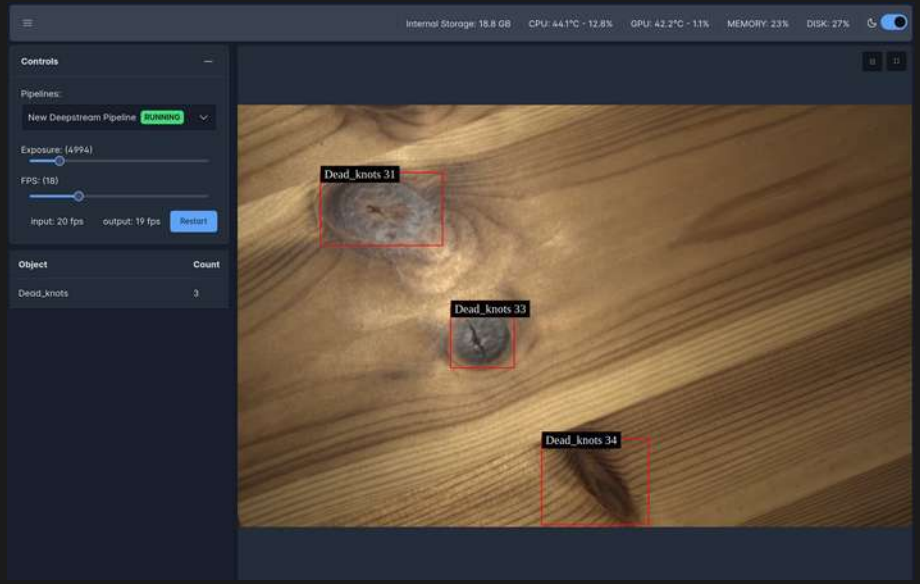
Project: KoSiNuS – Autonomous Smart Farming

A completely different world: outdoor, uncontrolled light, vibration, dust, rain.

AI is essential – no classical approach could handle the variability. Hardware integration and rugged engineering is what made deployment possible.

Different domain, same principle: imaging and integration first, model follows.

The Last Meter: UI, PLC, Meaningful Output



Operator Interface

PLC / MES Integration

The best vision system is worthless if the operator cannot act on the result.

What This Means for Your Projects

For Companies

Start with the imaging, not the algorithm.

Invest in a proper requirements phase – defect catalog, representative samples, pass/fail criteria – before anyone writes code.

A vision project touches quality, IT, PLC automation, production engineering, and shop floor management.

If only one department owns it, something will fall through the cracks.

For Researchers

The gap between a paper result and a production deployment is almost never the model architecture.

It is the physical setup, the data quality, and the organizational integration.

Questions to ask before any project:

What does the defect actually look like?
Can we see it with the right light?
Who needs the result, and in what form?

Gruenspecht Vision Labs

at a Glance

About Us

AI-powered optical inspection
From concept through deployment

Turnkey systems: optics to software

Experience in more than 50 projects across industries

13 engineers and scientists | Dresden, Germany | Projects across Germany and beyond

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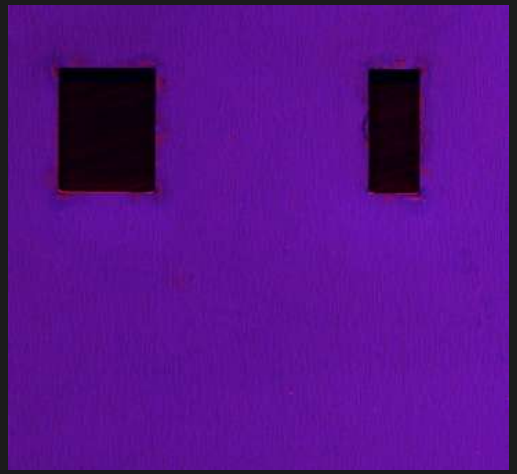

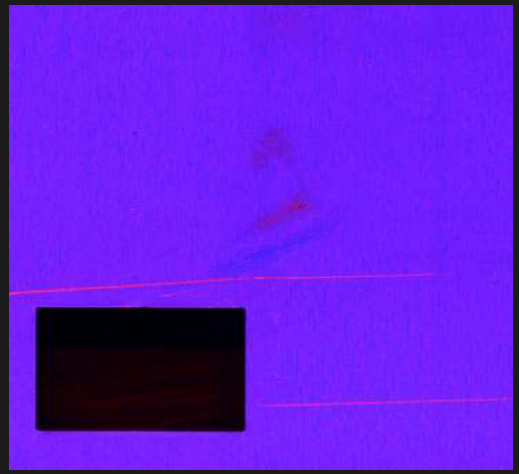

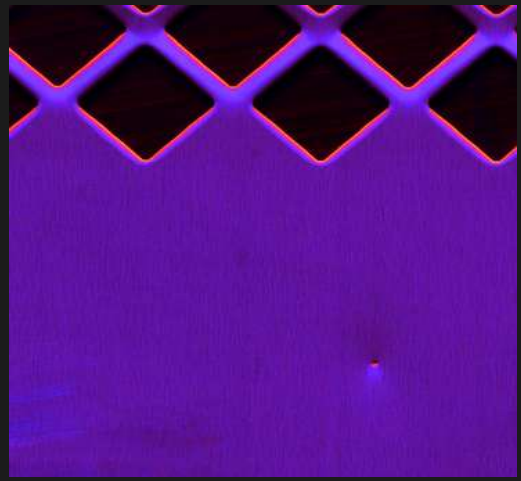

“AI gave us superpowers. The human skill is knowing where to point them.”

Questions & Discussion