DAI PIXEL ALLA PERFEZIONE: IL CONTROLLO QUALITÀ COSMETICO NELL'ERA NEURALE

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SEAVISION

INTELLIGENZA ARTIFICIALE E COSMETICA:
PERSONE E MACCHINE CHE CREANO BELLEZZA

Dip di Informatica - Università di Milano

11 Marzo 2026

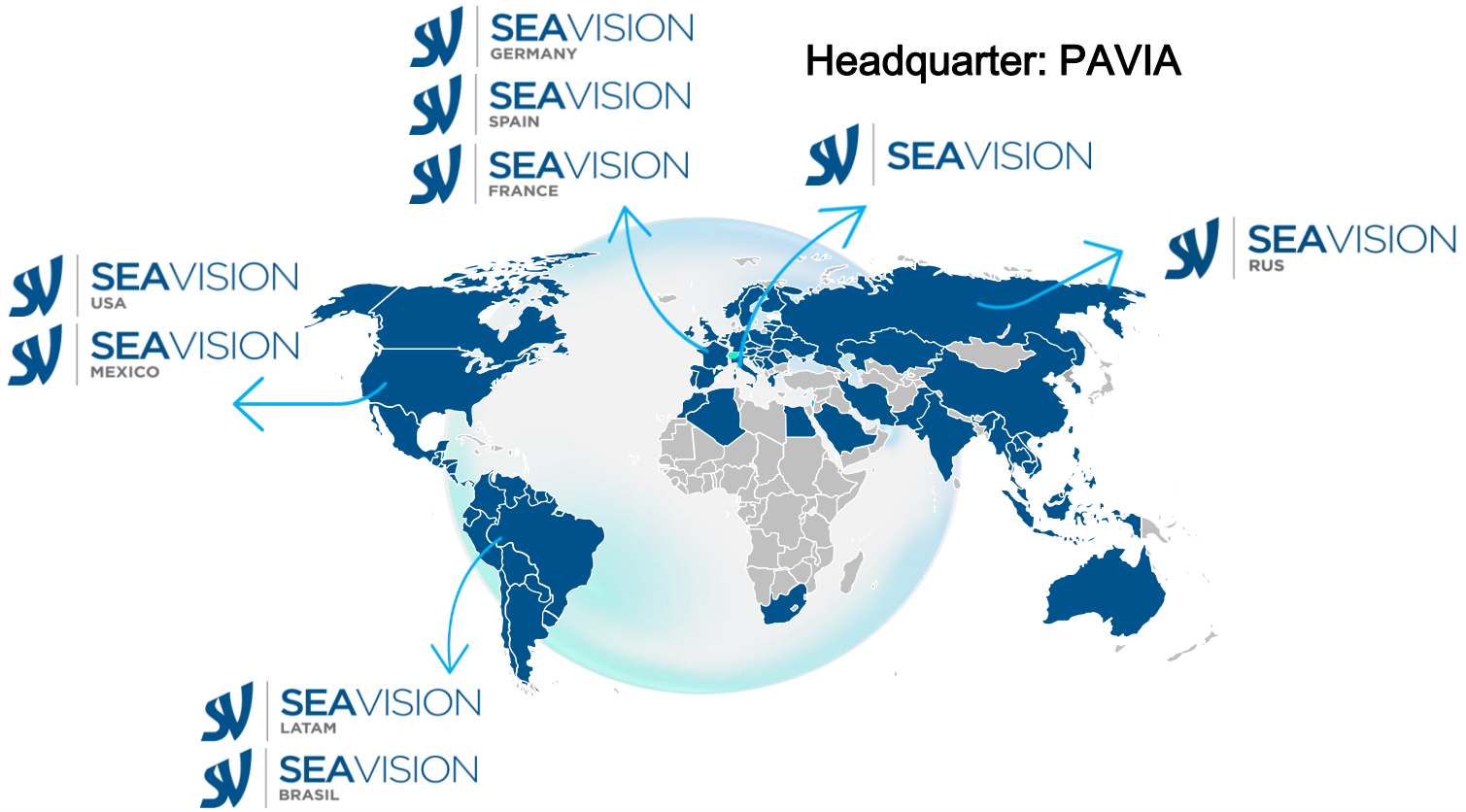
SICC
Società Italiana di Chimica e Scienze Cosmetologiche

SEAVISION

CORPORATE PRESENTATION

INTELLIGENZA ARTIFICIALE E COSMETICA: PERSONE E MACCHINE CHE CREANO BELLEZZA
Dip di Informatica - Università di Milano - 11 Marzo 2026

SHAPING LIFE SCIENCE **INNOVATION** FOR **OVER 30 YEARS**



ALCUNI NUMERI

10,000+

Sistemi di visione installati nel mondo

30+

Anni nel settore Life Science & Automation

2500+

Linee con full Track and Trace e Brand Protection

420+

Dipendenti nel mondo

75%

Del nostro personale viene da discipline STEM

IL NOSTRO APPROCCIO

Un motore,
tanti prodotti

Open Innovation
as a biz. model

Controllo
completo del
codice sorgente

AI VISION KNOW HOW

Segmentation

Detection

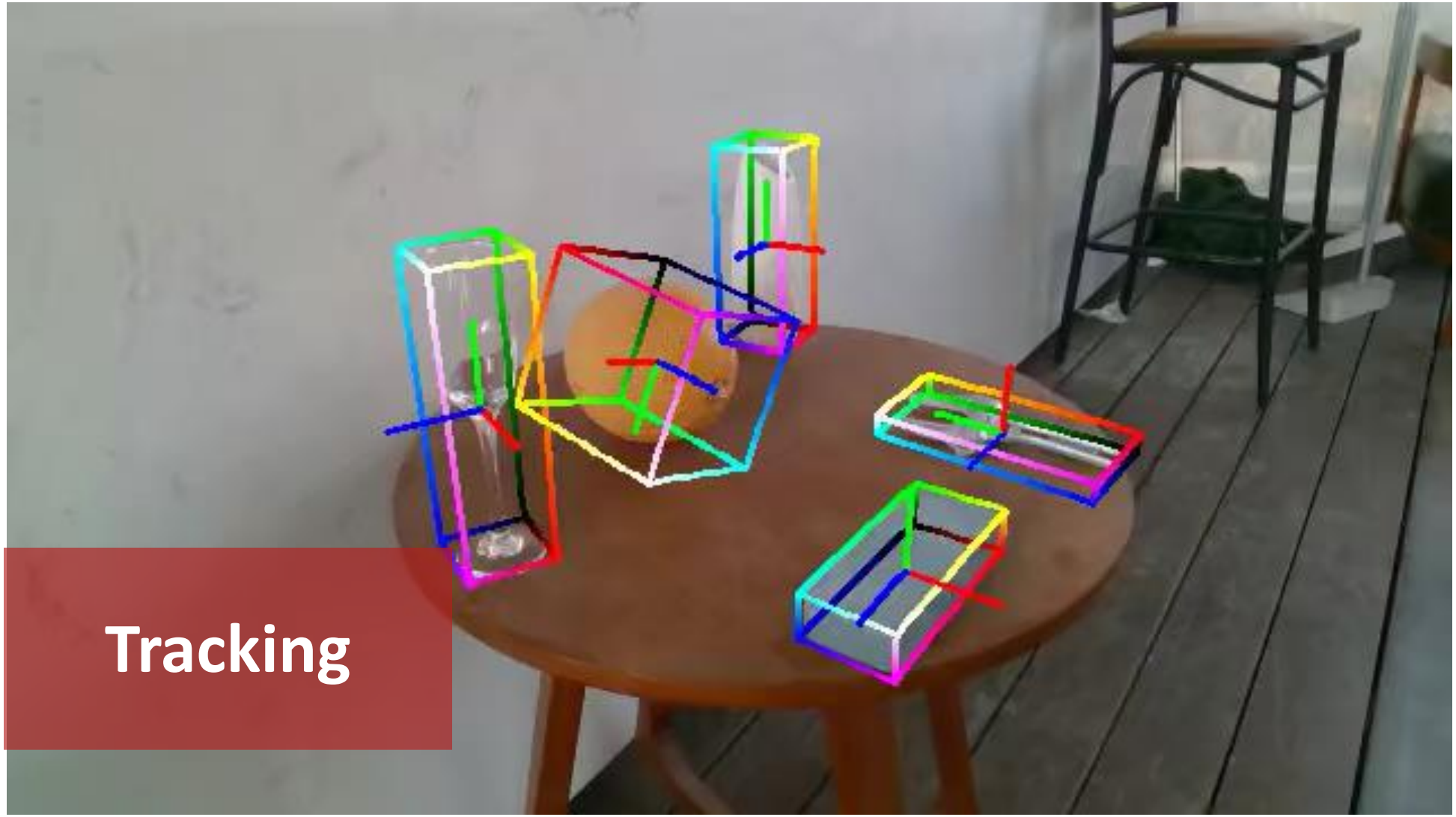
Tracking

Inspection

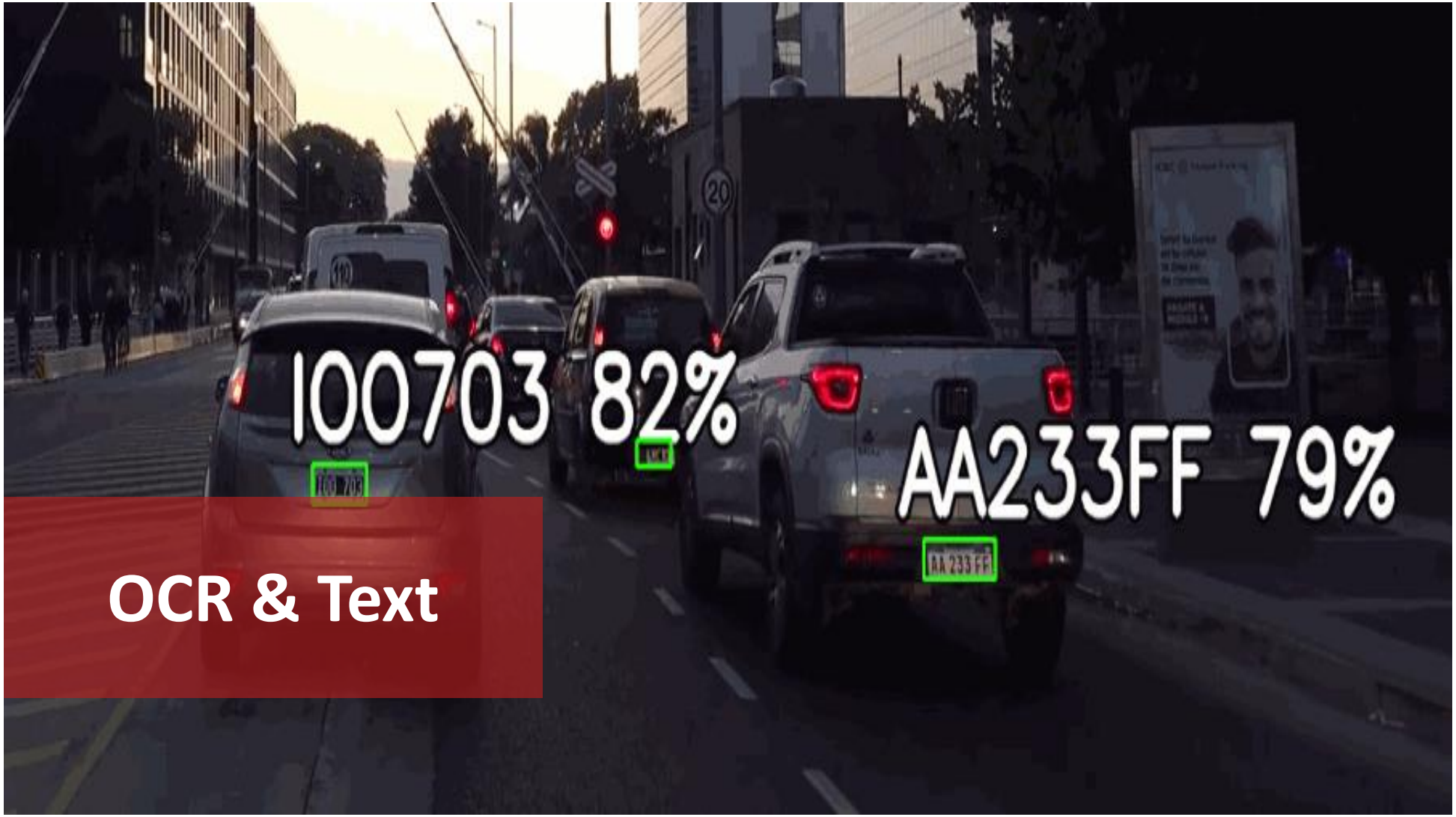
OCR & Text

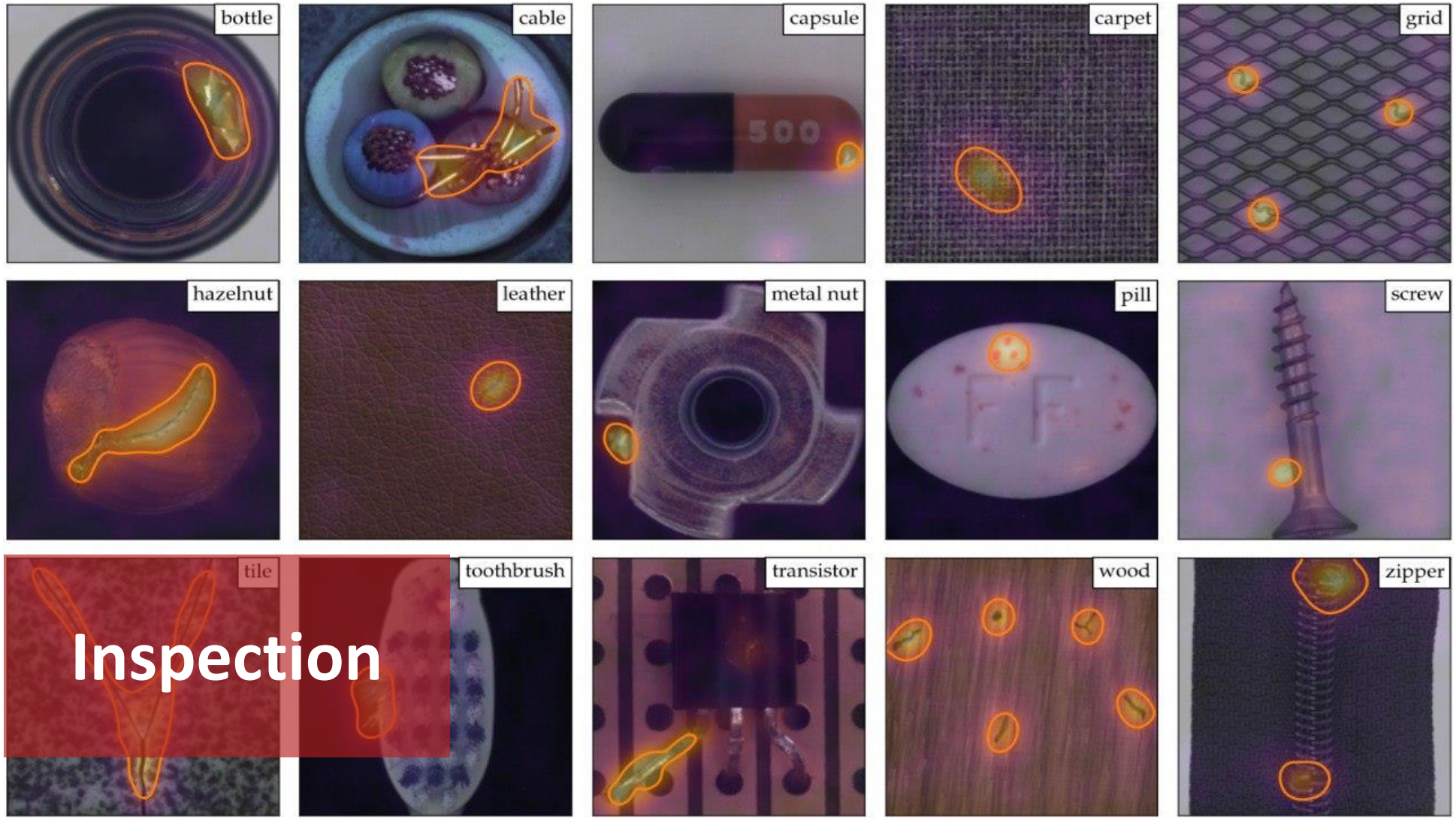
Segmentation

Detection

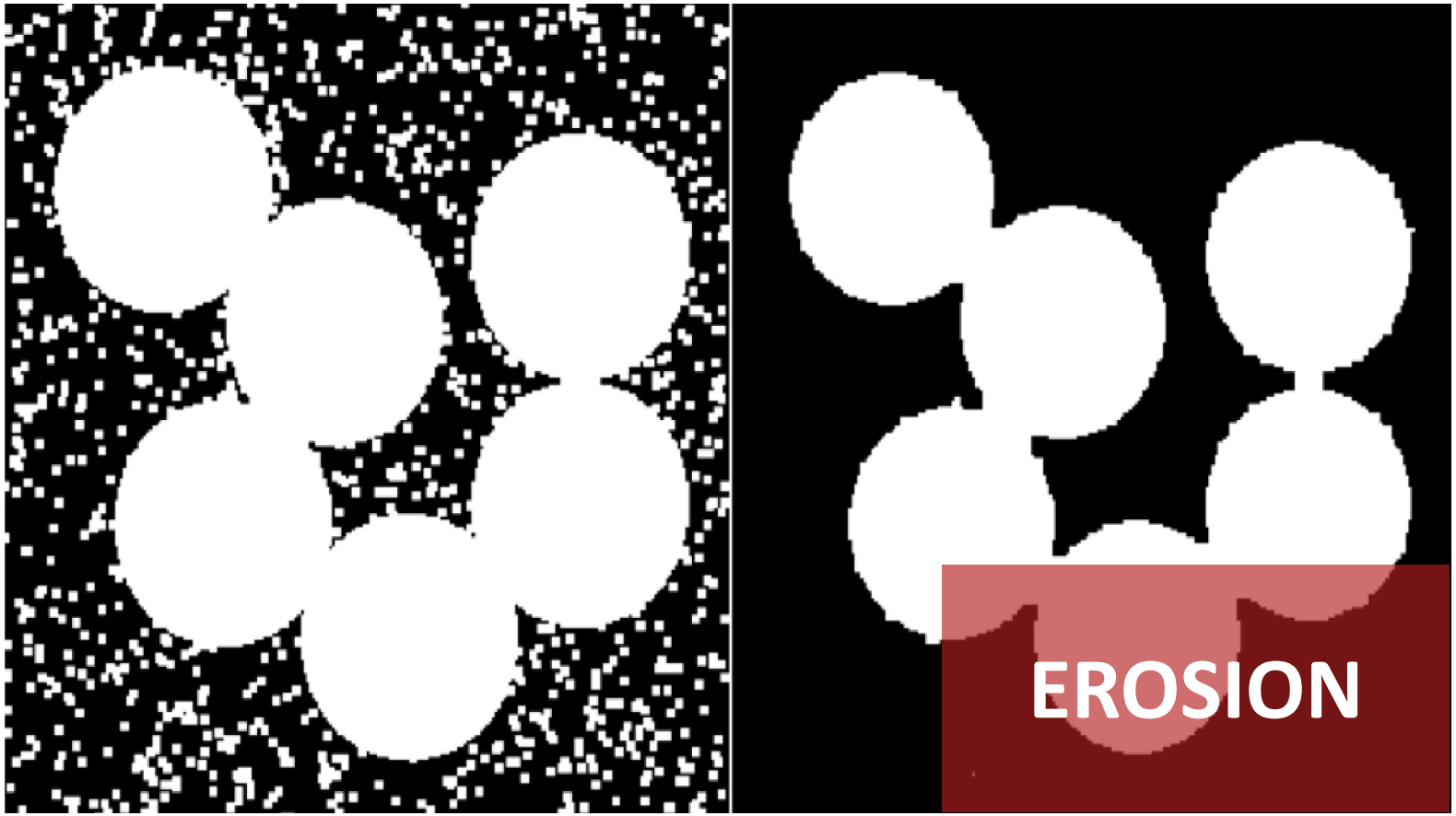


Tracking


100703 82%
AA233FF 79%
OCR & Text


bottle
cable
capsule
carpet
grid
hazelnut
leather
metal nut
pill
screw
tile
toothbrush
transistor
wood
zipper
Inspection

USE CASE # 1



Vecchio codice

Nuovo Codice

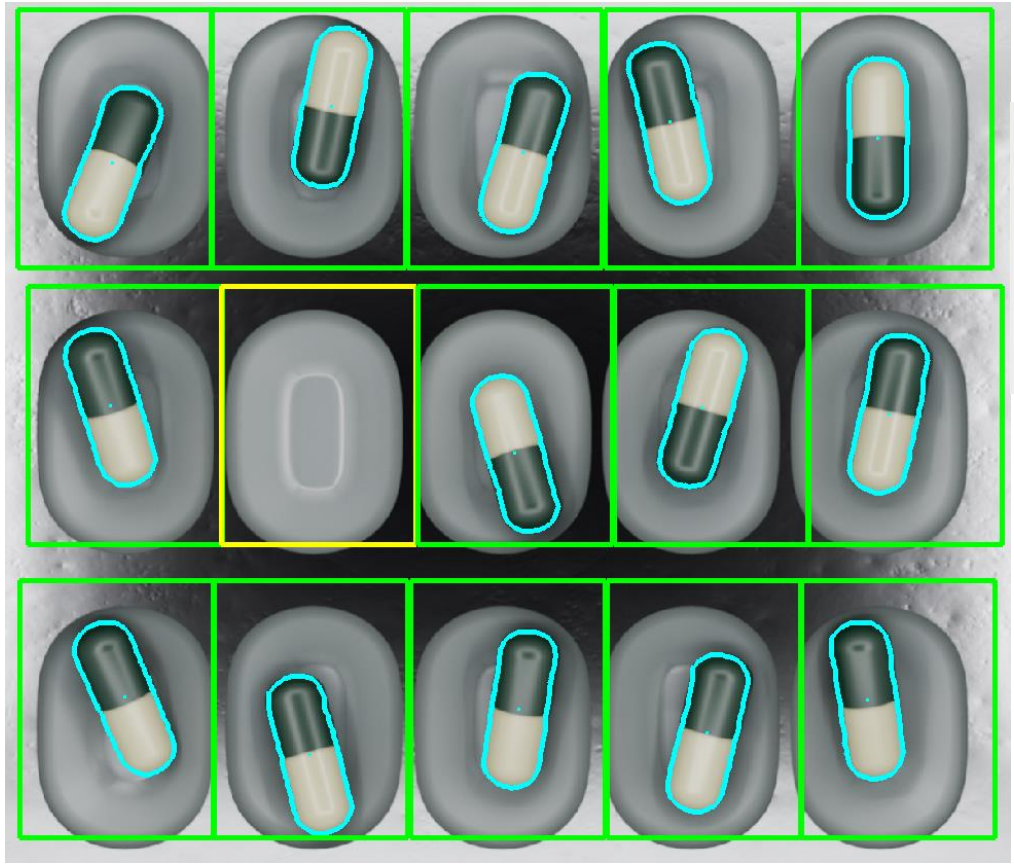
```
std::array<uint8_t, BUFFER_SIZE> buffer;
std::pmr::monotonic_buffer_resource pbr(buffer.data(), buffer.size());

auto runLoop = [&](const size_t size, const size_t kernelSize, auto &&in, auto &&out) noexcept {
   int foregroundPixels = 0;
   std::pmr::vector<uint8_t> kernelData(kernelSize, &pbr);
   const size_t rad = kernelSize / 2;
   auto itIn = in.begin();
   auto itOut = out.begin();
   for (const auto &end = in.end(); itIn != end; ++itIn, ++itOut) {
      if (kernelSize <= 64) {
         foregroundPixels += inner_loop<kind, true>(*itIn, *itOut, kernelSize, rad, kernelData);
      } else {
         foregroundPixels += inner_loop<kind, false>(*itIn, *itOut, kernelSize, rad, kernelData);
      }
      checkProgress(size);
   }
   progressListener.notify();

   return foregroundPixels;
};

// Rows:
runLoop(width, kernelWidth, rows(imageIn), rows(imageAus));

// Columns:
return runLoop(height, kernelHeight, cols(imageAus), cols(imageOut));
```

erosione generica per direzione

erosione per riga

erosione per colonna

Beneficio -> Facilità d'uso per il cliente



Pre-Neural

Operations of this Measure

1 application of the region of interest: the whole windo
*** trovo la parte bianca ***
3 transformation from RGB to monochrome
4 threshold (>=)
5 morphologic filter: opening 2D
6 extraction of the connected components
7 deletion of the small components (area < threshold)
8 deletion of the lateral components
*** trovo la parte nera ***
10 transformation from RGB to monochrome
11 threshold (>=)
12 morphologic filter: opening 2D
13 morphologic filter: closing 2D
14 fill 2D image from side
15 fill 2D image from side
16 a1(x,y) OP b1(x,y)
*** unisco le due parti ***
18 a1(x,y) OP b1(x,y)
19 morphologic filter: closing 2D
20 extraction of the connected components
21 extraction of the max. component

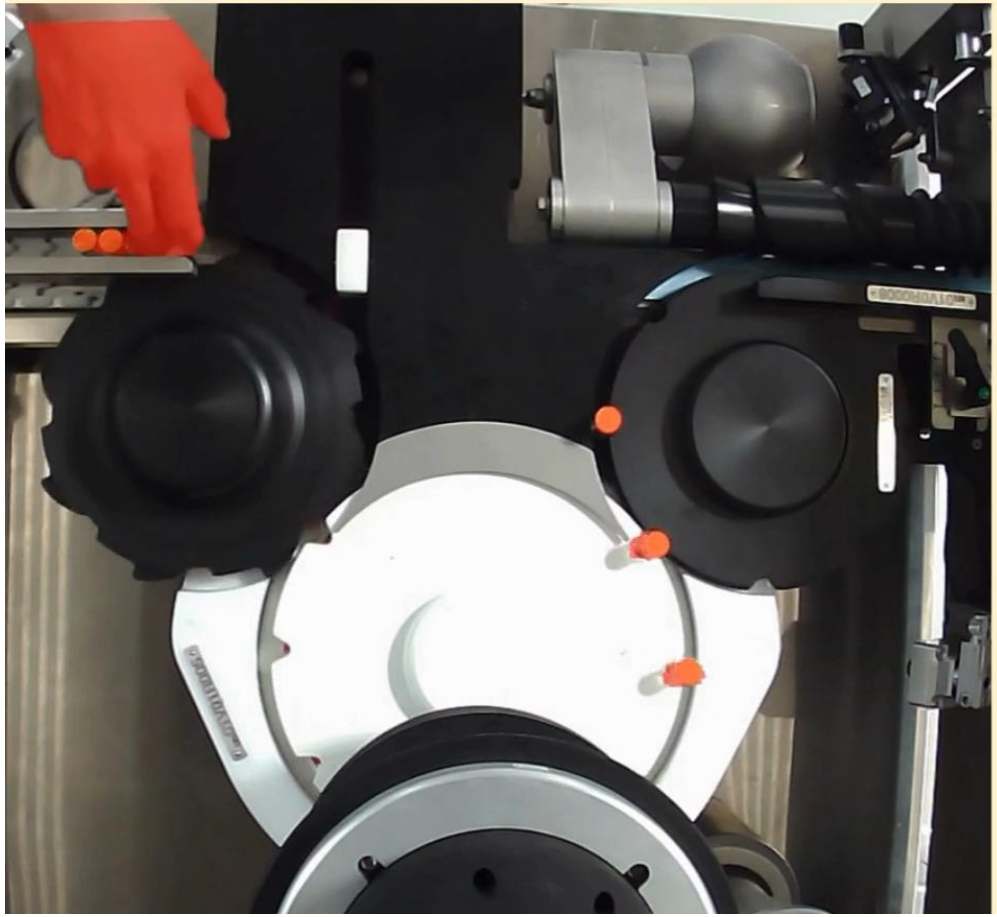
Neural

Operations of this Measure

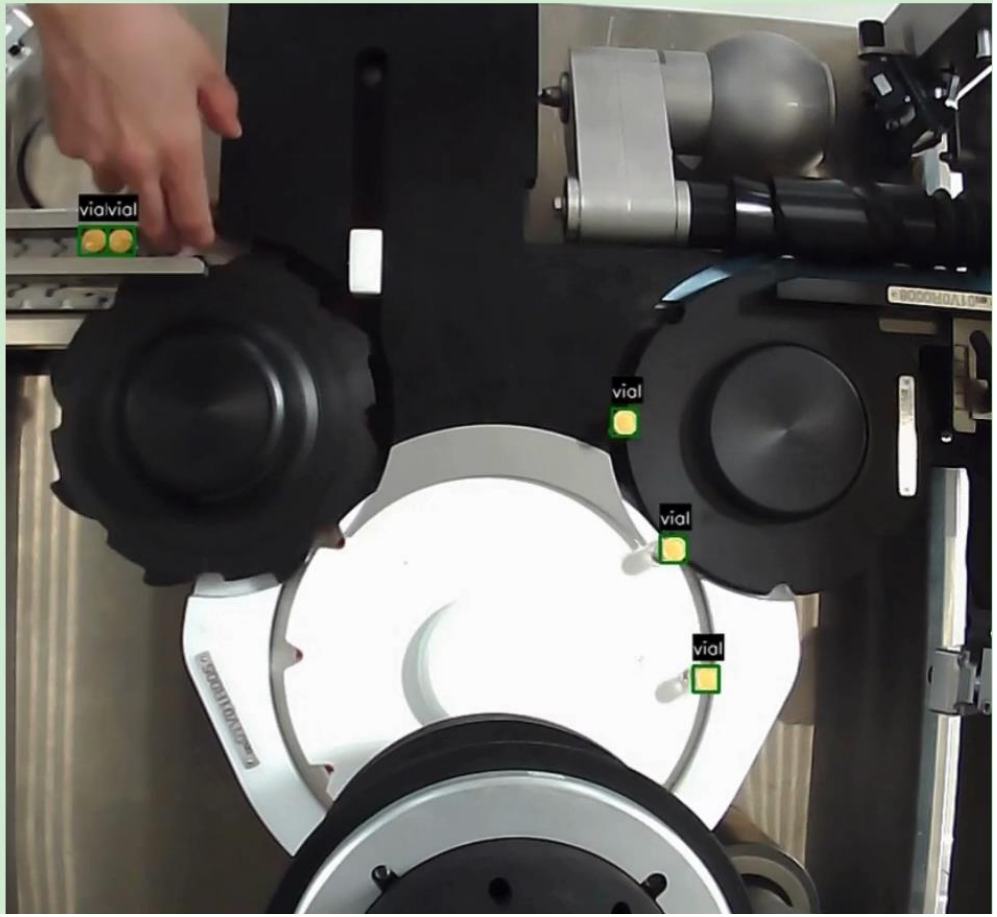
1 application of the region of interest: the whole window
2 segmentation with argo vision graph
3 filter semantic components

USE CASE # 2

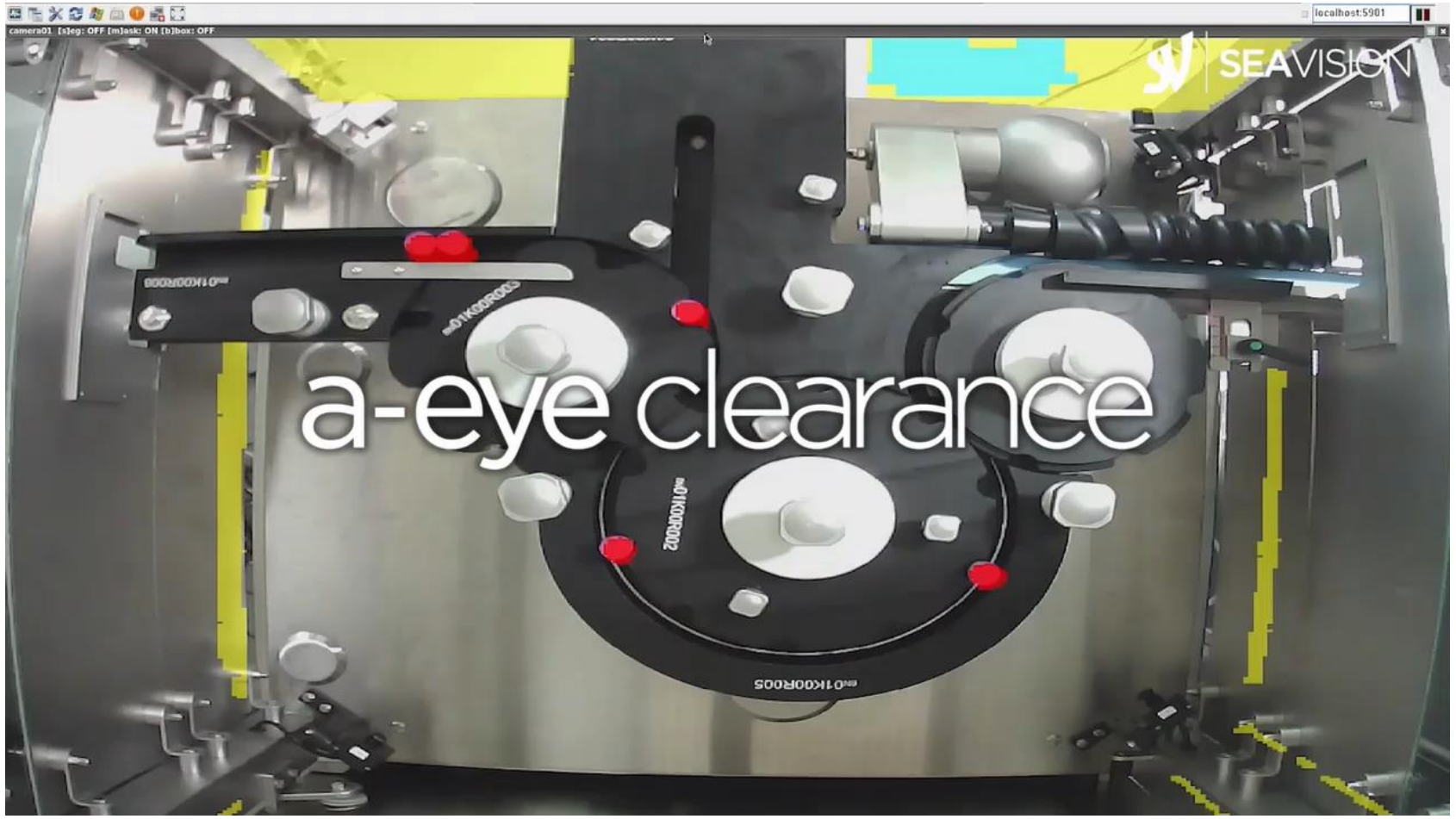
Anomaly Detection



Object Detection

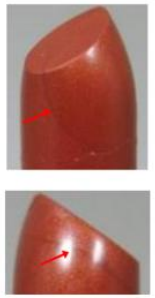


Beneficio -> Riduzione errore e tempi cambio formato



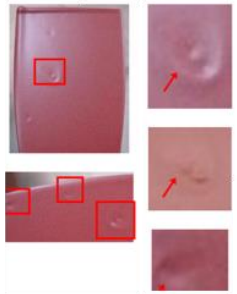
USE CASE # 3

Stains

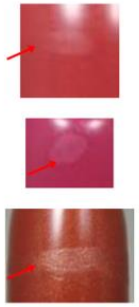


Logo Defects

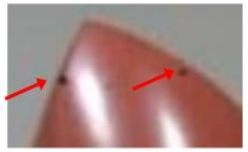
Blister



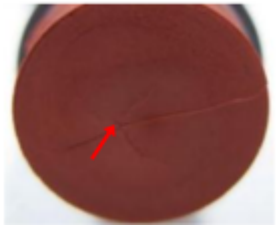
Scuffs



Pinholes



Craks

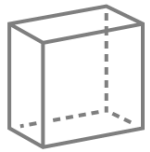


Tilt

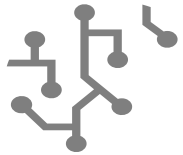
Scratches

Surface

Real Images



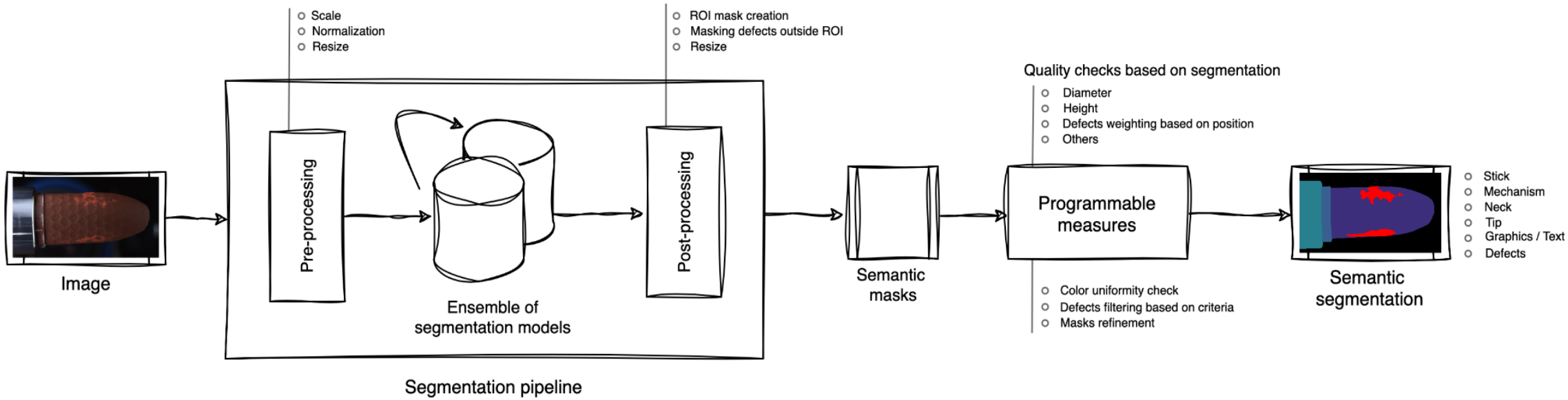
3D Images



Gen AI Images

Data Augmentation

AI MODEL → FORMAT TOLERANCES → PRODUCTION



A **deep learning** model trained in supervised mode (minimizing error between prediction and ground-truth)

AI MODEL

FORMAT TOLERANCES

Operators can modify these parameters

Bave, graffi e fori

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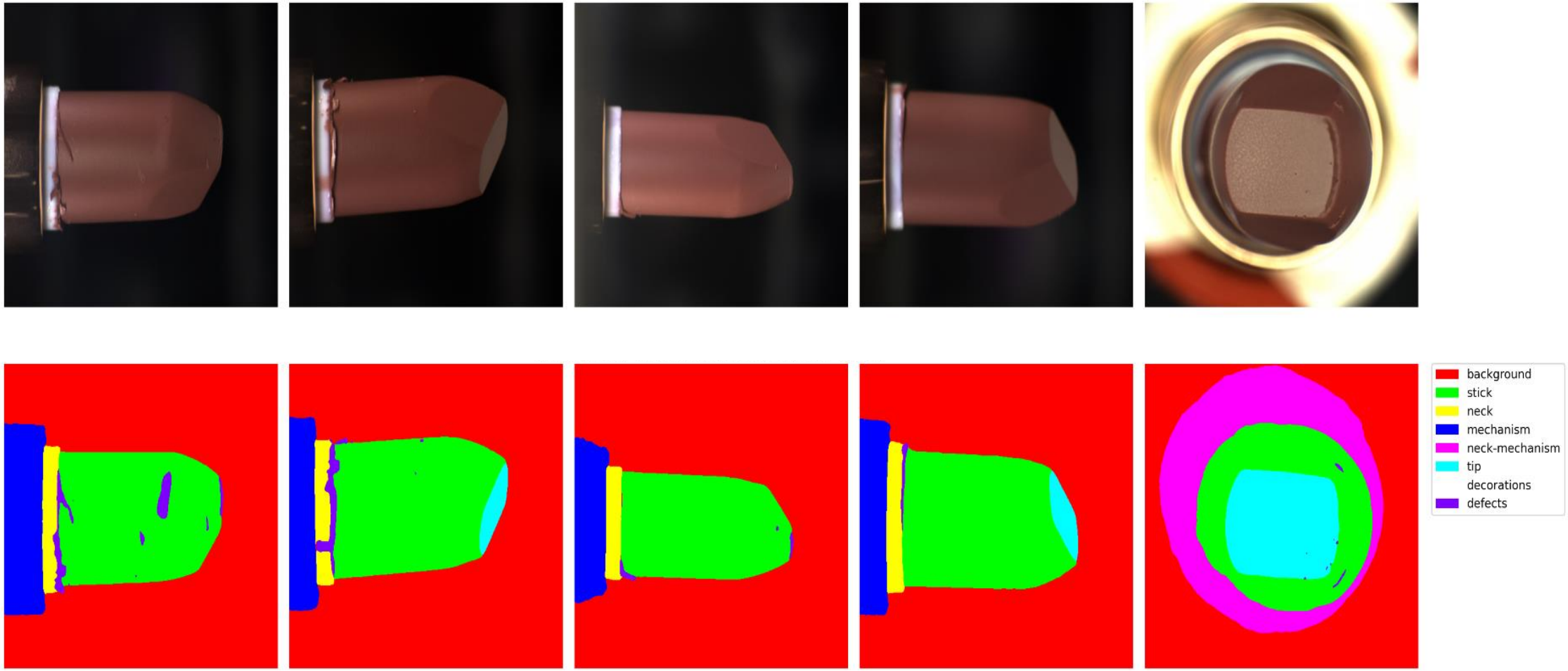
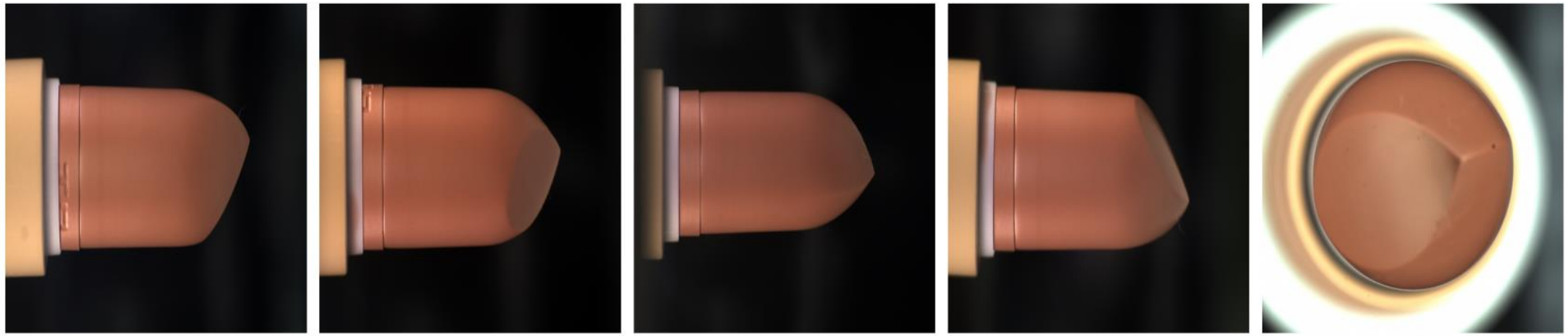
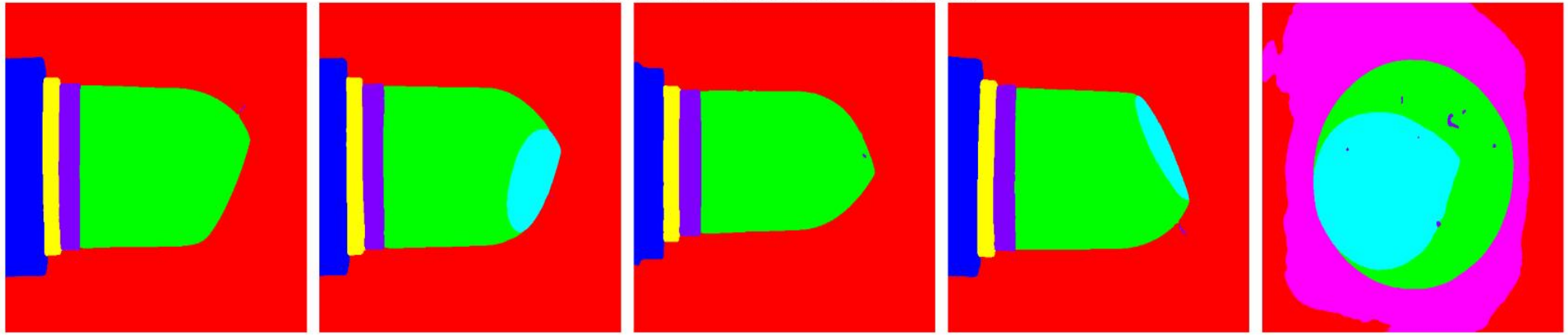


Difetti sul colletto



v24.0.1/0023r (single-defect-class) zoom 1.5 (ONNX)



Alonature

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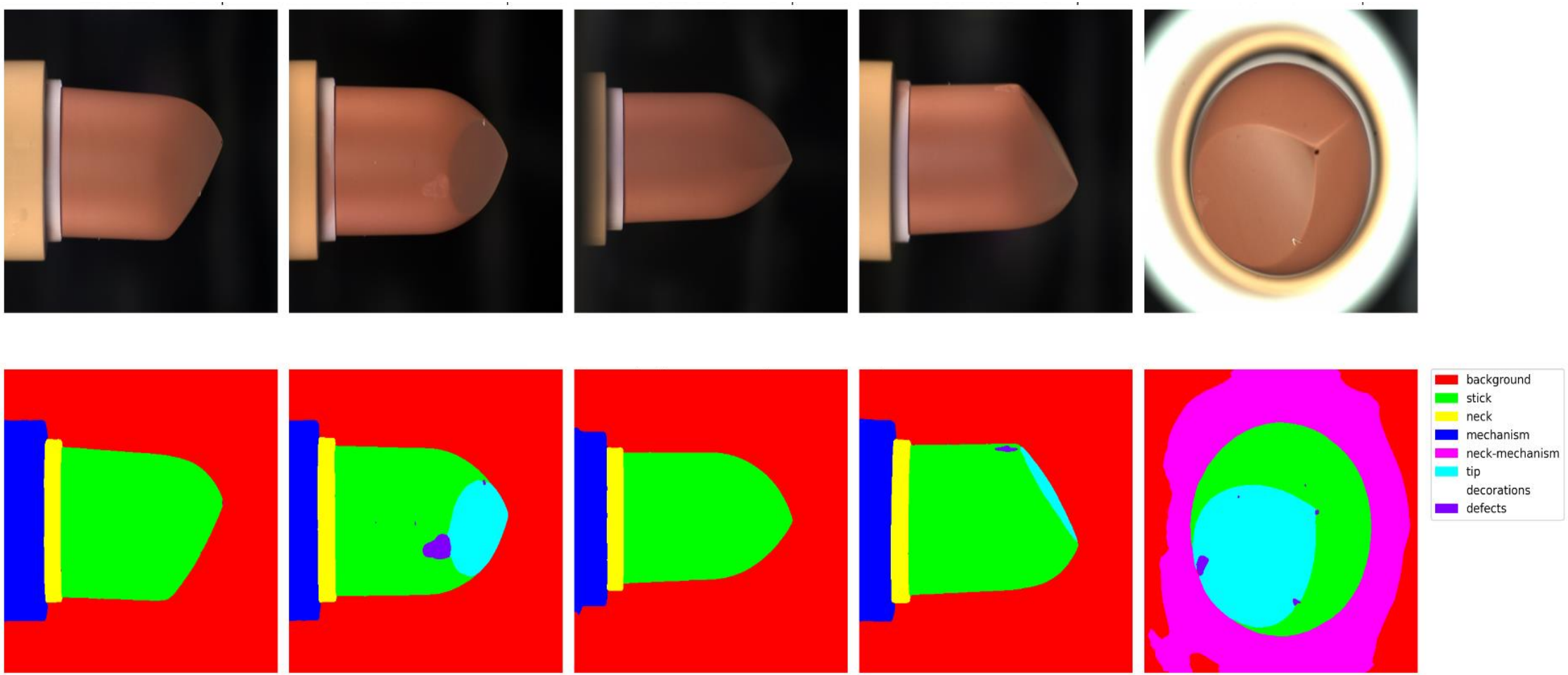
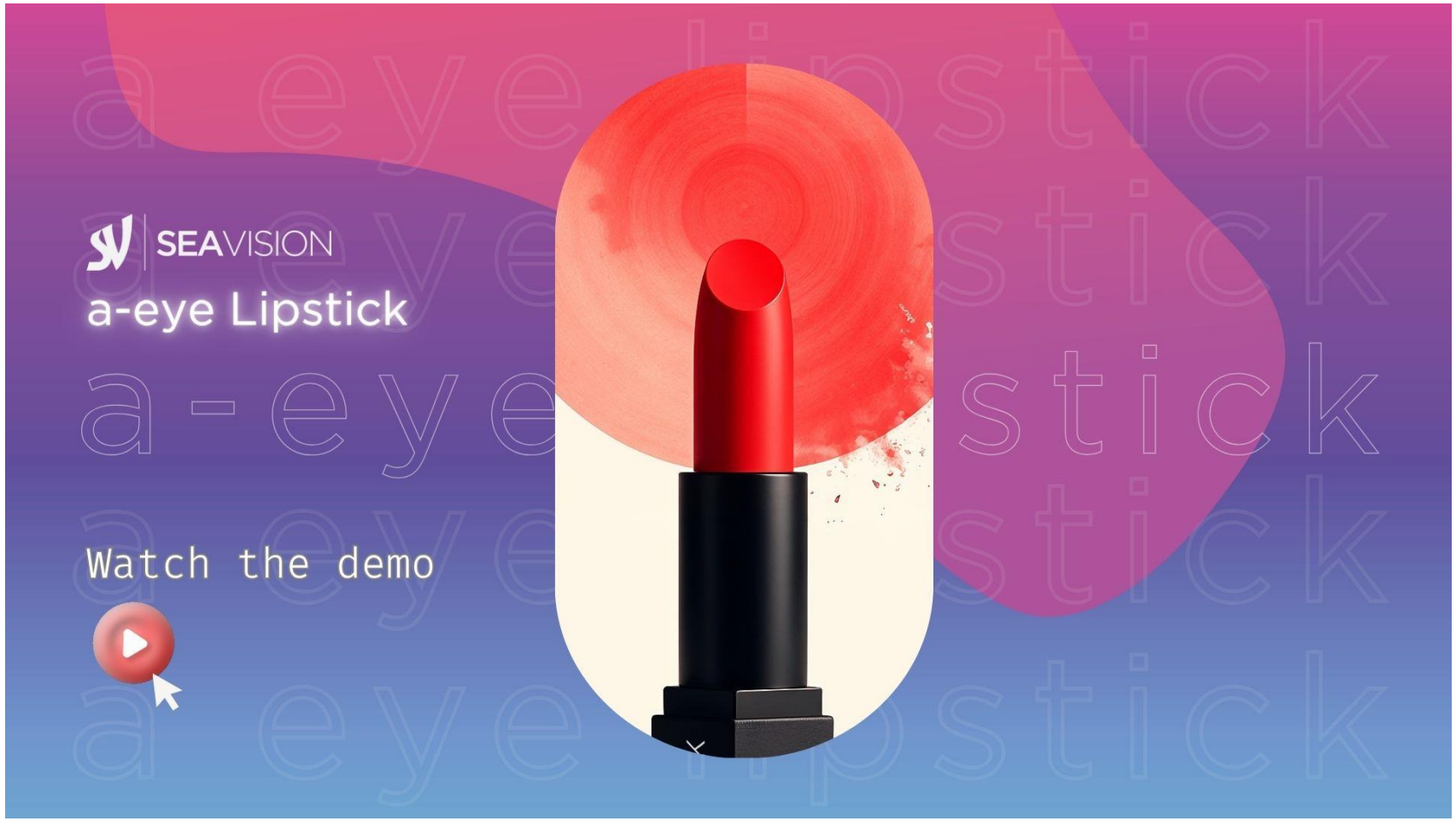
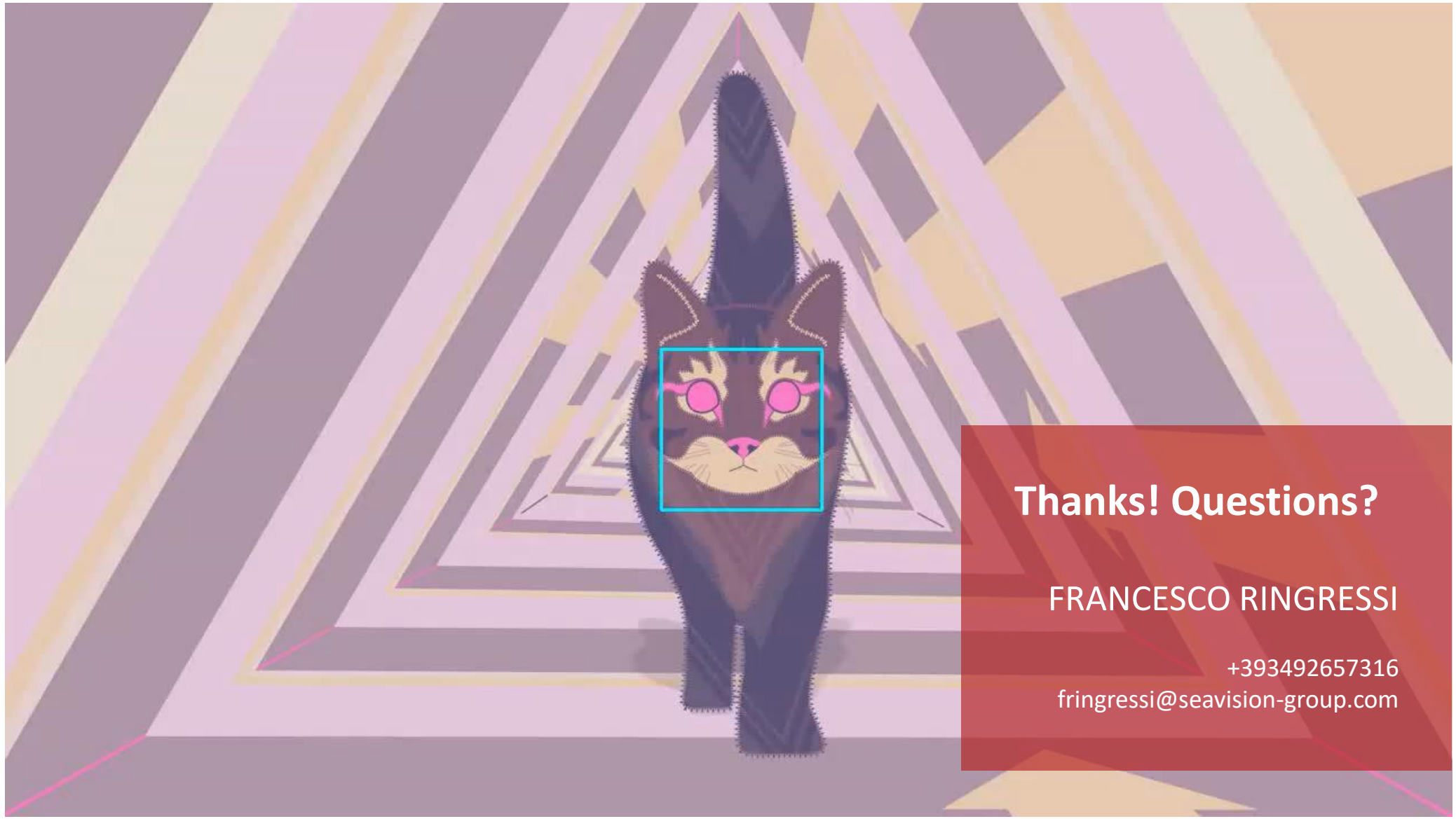


Beneficio -> 100 % ispezione automatica e garantita





Thanks! Questions?

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