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INCREASING LOGISTICS PRODUCTIVITY WITH DEEP LEARNING: THE EACHPACK PROJECT

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EACHPack

End-to-end AutomatiC Handling of small Packages

IT+Robotics



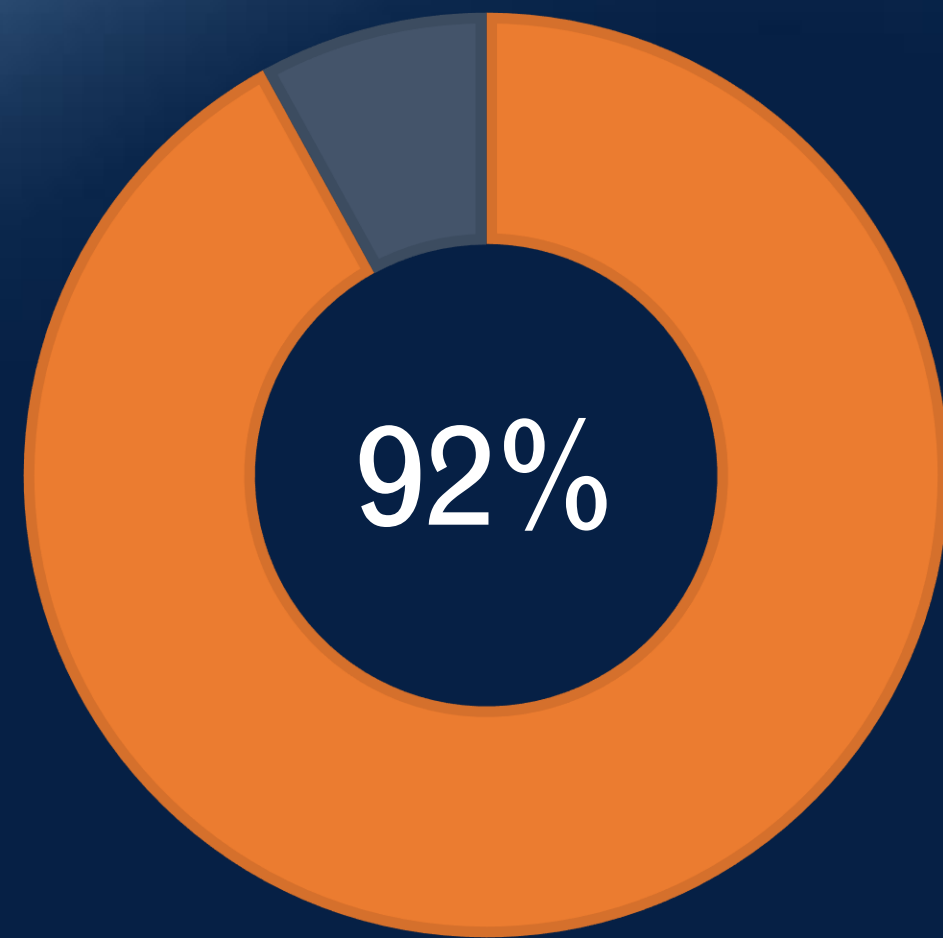
UNIVERSITÀ
DEGLI STUDI
DI PADOVA



trinity ENGAGE WITH
AGILE MANUFACTURING

Motivations

The growth of e-commerce is leading to the explosion of small parcel post shipments



Small packages below 5kg



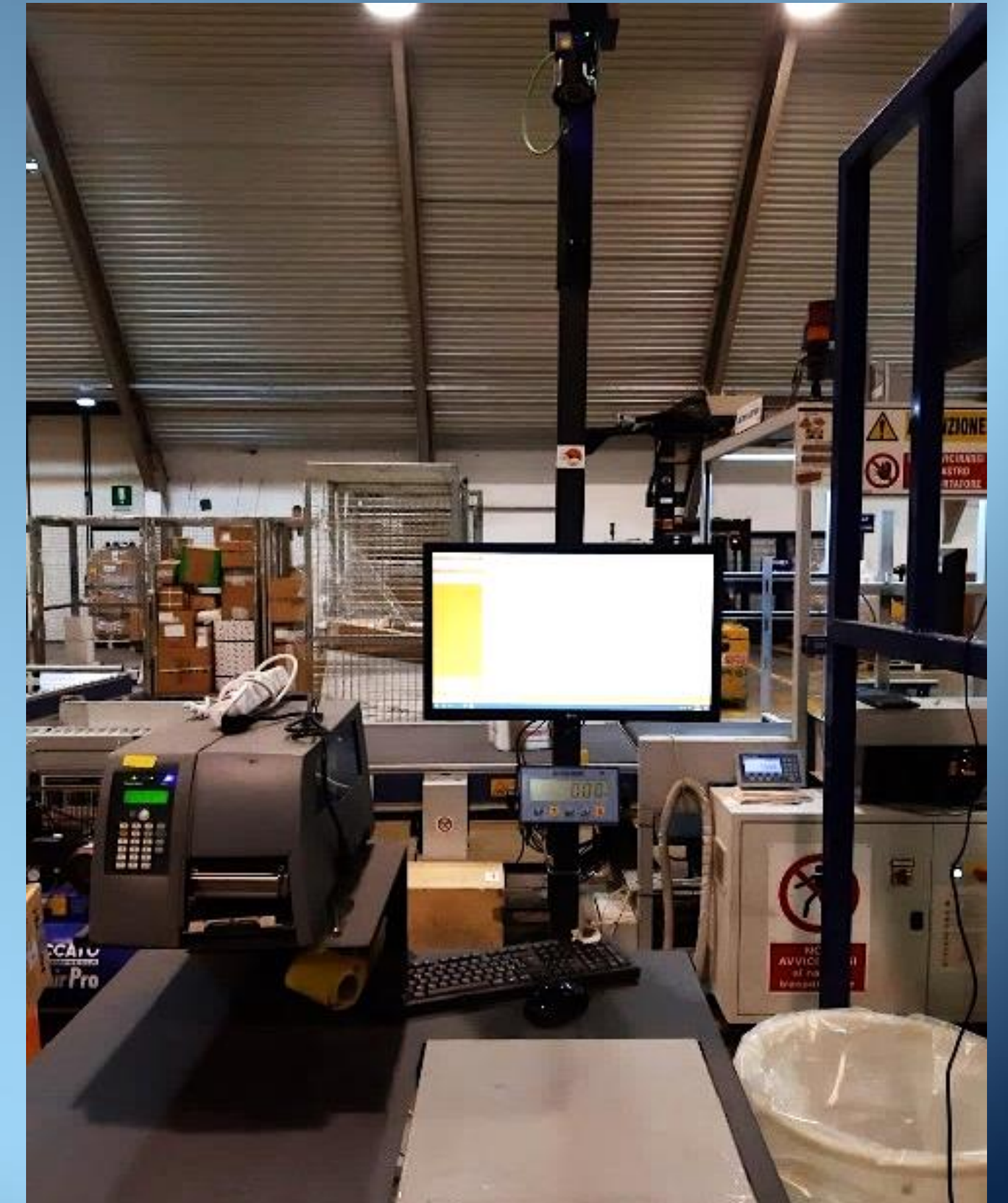
The number of shipments increases

Motivations

Weighing and sorting of small parcels are performed manually



- Operators are subjected to stressful 3-4 hours shifts
- They arrive to handle up to 400 packages per hour



EACHPack Solution

To create a complete
robotized handling
system for parcel posts



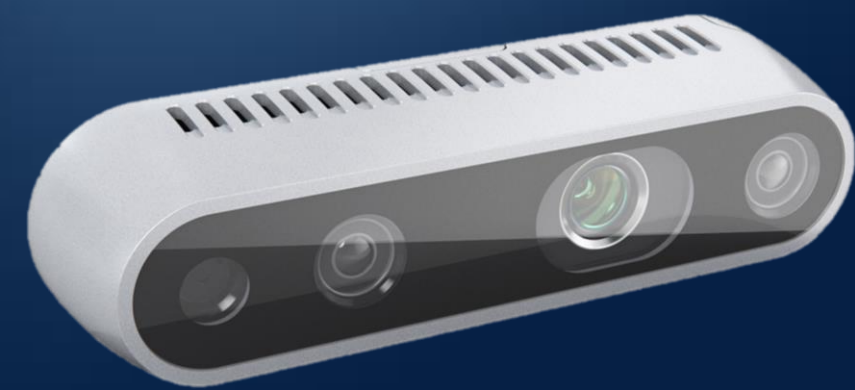
Challenge

Bin picking systems based on 2D or 3D vision technologies are widely used but require the model (CAD) of the object to work.

- Parcels and envelopes do not have a fixed shape, size or color
- Envelopes are flexible
- Packages are randomly placed inside bins



Instance Segmentation

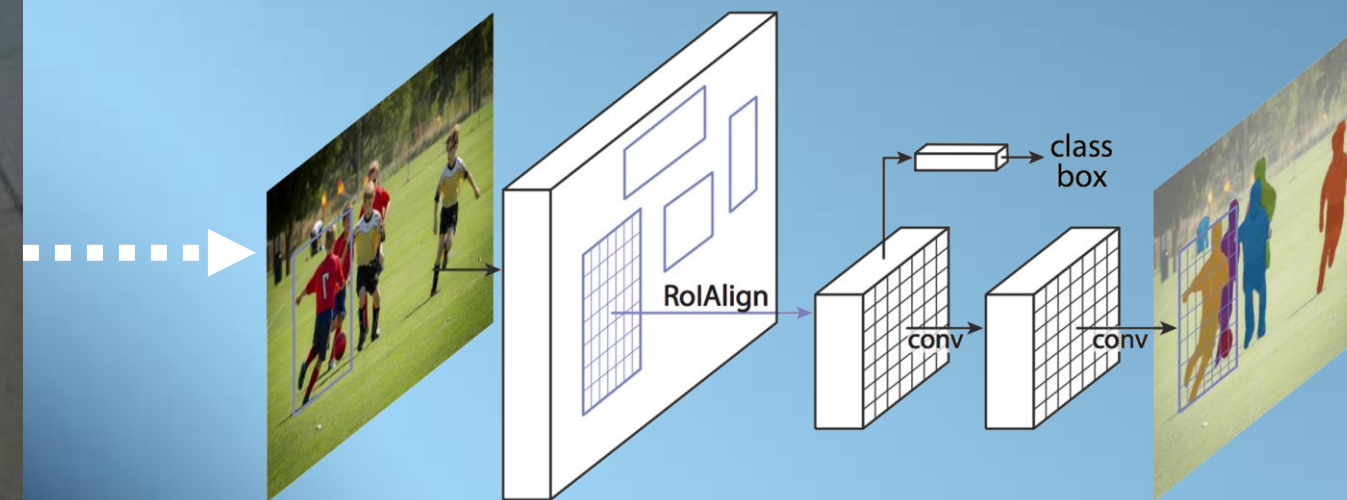


3D Sensor

RGB



Depth



Mask R-CNN

Instance Segmentation



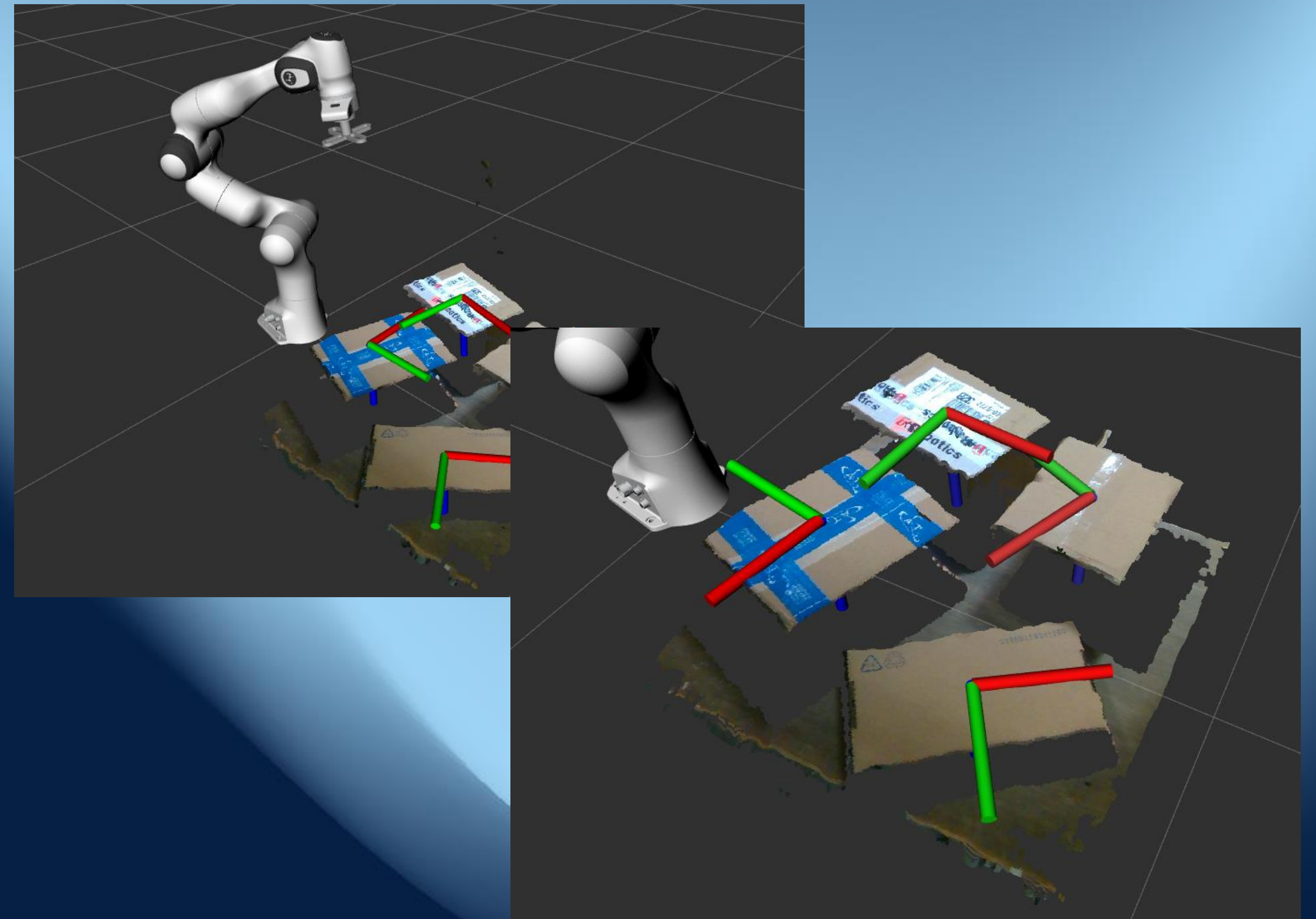
3D Instance Segmentation

Results

Processing in less than
1 second on a consumer
GPU



Results



Go-to-Market

The EACHPack project is the base of a new line of products of the IT+Robotics EyeT+ family, oriented to model-less object manipulation, called “Flex”

EYE  FLEX

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Thank you!

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