13th CDTI - NEDO Joint Workshop

"AI-Equipped Collaborative Robot Technology"

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Case study in agriculture: dual-arm collaborative mobile manipulator for autonomous AI-based harvesting

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R&D Director

Robotnik

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Robotnik

MORE THAN **20 YEARS** AS

LEADERS IN MOBILE ROBOTICS

We **design, manufacture** and **market** autonomous mobile robots and manipulators, capable of working autonomously in collaborative environments, sharing space with humans.

+50
Countries

+5 700
Robots on market

22
Years of experience

+4 800 Customers are using our **robots**

HP · HD Logistics · intel · sacyr · Honda · BMW · SIEMENS · BOSCH · Red Eléctrica de España · Disney · Google · Qualcomm · PROSEGUR · Forte Secur Group

Gobierno de España · Ministerio de Ciencia, Innovación y Universidades · CDTI Innovación · NEDO

Business verticals

Robotnik

Products

Autonomous **Mobile Robots** & **Manipulators**

Services

Mobile Robotic Projects

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Product portfolio

PRODUCT OVERVIEW

ROBOTNIK'S SOFTWARE STACK

Modular software architecture with an extensive set of 500+ packages that can be customized to provide turnkey and full-stack solutions covering a wide range of applications ROS/ROS2-based.

- EASY CONFIGURATION
- COLLABORATIVE
- AUTONOMY
- ADVANCED USER INTERFACE (HMI)
- FLEET MANAGEMENT SYSTEM (FMS)

AMR

AUTONOMOUS MOBILE ROBOTS

Portfolio of mobile bases for multi-industry indoor and outdoor applications with modular configuration to be integrated with any components.

View our video

MMR

MOBILE MANIPULATOR ROBOTS

Mobile Manipulator robots designed for plug & play with robotic arms or any other components working autonomously or collaboratively.

View our video

Mobile platforms portfolio

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AMRs

RB-WATCHER

RB-THERON

RB-ROBOUT

MMRs

RB-KAIROS+

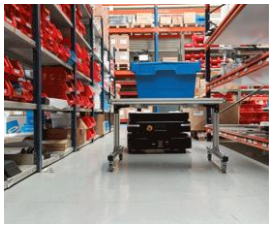
RB-ROBOUT+

RB-VOGUI+

XL-GEN

APPs

Video



Video

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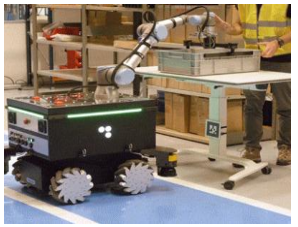

Video

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Case study in agriculture: dual-arm collaborative mobile manipulator for AI-based harvesting

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Disadvantages of Current Harvesters:

- Dependence on a driver and use of gasoline.
- Loss of grapes and potential negative impact on their quality.
- Health risks associated with manual operation/traditional machinery.

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OUR SOLUTION: AUTONOMOUS AI BASED HARVESTING

Challenge 1: *Strict requirements for Robotic Navigation in Vineyards*

- High traction and long-range autonomy.
- Strict width limitation (1.5m) for movement between rows.
- Ability to navigate on significant slopes (15-25º incline).
- Obstacle detection and omnidirectional movement.

Challenge 2: *Biomimicry Requirements in the Harvest*

The harvesting process is divided into two phases:
bunch picking and stem cutting.

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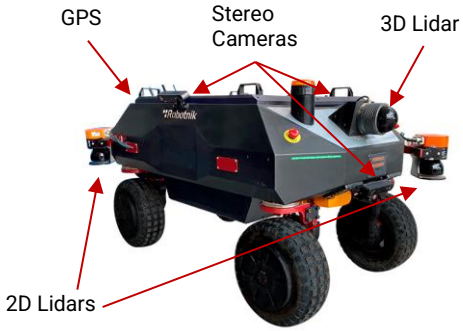
Challenge 1: Strict requirements for Robotic Navigation in Vineyards

Hardware solution:

RB-VOGUI XL

- Weight: 250 kg
- Speed: 1 m/s
- Autonomy: 6-8h
- Traction Motors: 4 x 750W
- Steering Motors: 4 x 200W
- Temperature Range: -10°C to +45°C
- Load Capacity: Up to 200 kg
- Maximum Incline: 47%



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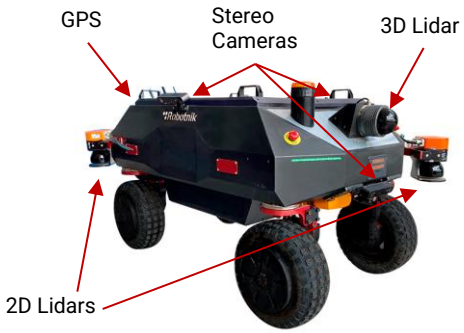
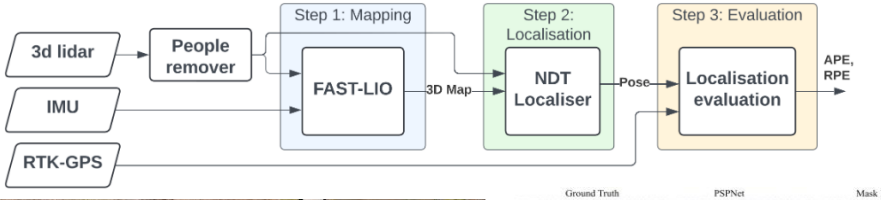
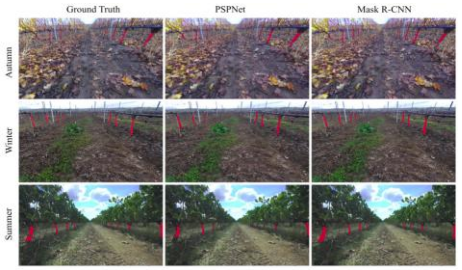
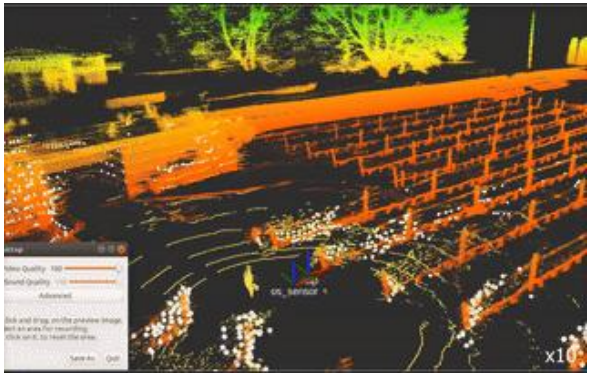


Software solution:







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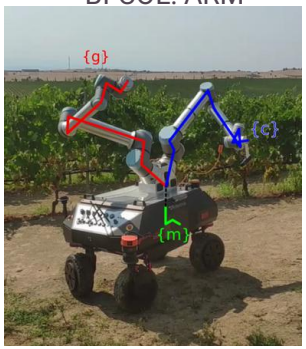
Challenge 2: Biomimicry Requirements in the Harvest

Hardware solution:

BI-COL. ARM



AUT. SCISSORS

GRASPING TOOL

Software solution:

Searching POI

- Moving through the crop line
- AI Searching for grape clusters

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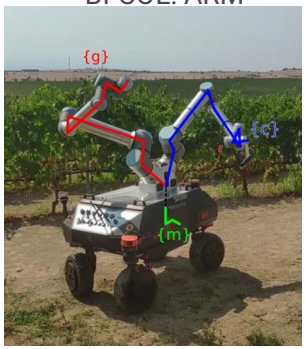

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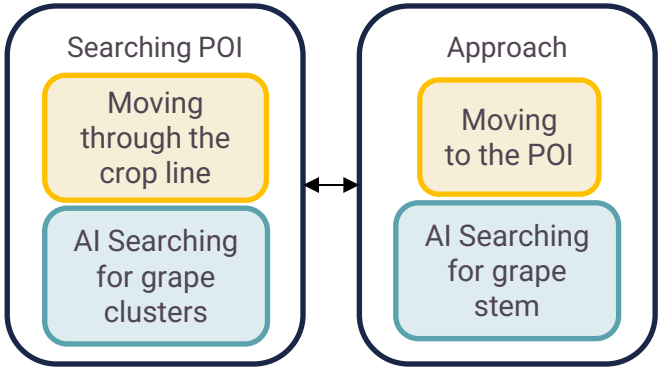

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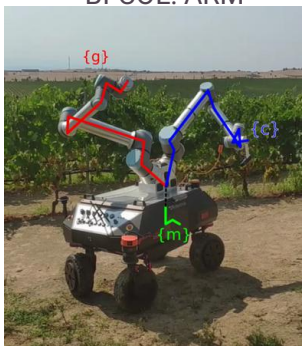

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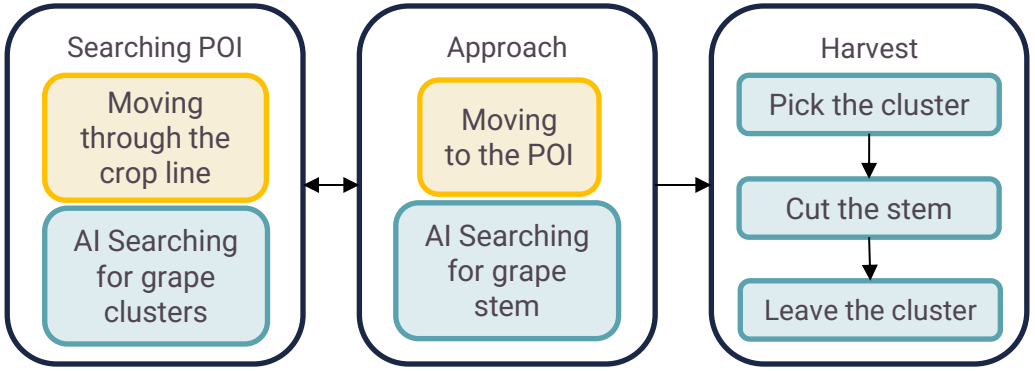

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Ideas for a Japan – Robotnik collaboration

Robotnik

1. Market & Channel Partners (Distribution)

- Resell Robotnik AMRs and mobile manipulators in Japan.
- Position and promote “Japan-ready” product configurations.
- Provide local demos, first-line support and spare parts.

2. Solution & Integration Partners

- Use Robotnik platforms as the base for turnkey applications (manufacturing, logistics, inspection…).
- Integrate with customer systems (WMS/MES/PLC, safety, IT/OT).
- Deliver services and long-term projects to Japanese end-users.

3. Innovation & Ecosystem Partners

- Co-develop new applications and pilot projects in Japanese sites.
- Localize and certify Robotnik platforms for the Japanese market (language, standards, safety).
- Build ROS 2 & mobile robotics hubs (training, research, community) around Robotnik platforms.

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Study case in agriculture: double collaborative arm manipulator for AI-based harvesting

Thank you
ありがとうございます

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