AUTONOMOUS MOBILE ROBOTS (INESC TEC)

The use of autonomous mobile manipulators to transport raw materials and individually manufactured parts between stores and workshops, as well as between workshops and subassembly areas, increasing the intra-logistic process efficiency while also freeing up human resources for higher-value tasks.

Video

https://bit.ly/3OCVOpE

https://bit.ly/3OcptV7

https://bit.ly/3YdhpI8

Technology

Four different technologies are combined to create collaborative solutions:

- Mobile Manipulator composed of an autonomous mobile platform and a collaborative robot.
- Skill-based programming for fast and intuitive teaching of new robotic tasks.
- Intuitive Human-Robot Interaction based on augmented reality.
- Advanced perception for long-term autonomy (autonomous navigation and CAD-based perception and grasping).

Applications

Individual parts transportation in shipyards is still nowadays heavily reliant on human operators. This transportation is typically performed by hand or using self-propelled, pulled or pushed platforms. However, since these logistic tasks are dull, dirty and dangerous for the human operator, and due to the aging of the European population, it is important to liberate and empower the current human workforce to perform more added-value tasks. Therefore, there is a high interest in the shipbuilding sector to automate its intra-logistic operations. To answer these challenges, Mari4_YARD proposes using a mobile manipulator to pick individual parts from containers, combining AGV capabilities with robotic arm manipulation dexterity. The developed technologies are hardware agnostic, allowing for easier deployment to different robot hardware configurations while taking into account different application requirements.

Involved partners