

User-centric robotic solutions for shipbuilding

Mari4_YARD 2nd workshop



Mari4_YARD is implementing worker-centric solutions for supporting key labour-intensive shipbuilding tasks by preserving the knowledge and skills of the operators and their biomechanics health.

This workshop aimed to show and test some of the innovative technologies developed by Mari4_YARD, like exoskeletons, mobile manipulators for logistic operations, collaborative robots for welding, and augmented reality.

AGENDA

- 10:00-10:15 Welcome (Luís Carneiro, Germano Veiga - INESC TEC)
- 10:15-10:25 Brief introduction of Mari4_YARD project (Diego Perez - AIMEN)
- 10:25-10:35 Exoskeletons assisting workers: user-centered design towards their application in shipbuilding industry (Andrea Parri - IUVO)
- 10:35-10:45 Drone 3D scanning in inaccessible areas in ships (Jonatan Moya - GHENOVA)
- 10:45-10:55 Mobile manipulator for logistic operations & augmented reality as a support tool (Luis Rocha - INESC TEC)
- 10:55-11:05 Collaborative robots for welding (Isidro Roberto Fernández - AIMEN)
- 11:05-11:20 Coffee Break
- 11:20-12:15 Breakout rooms - Hands-on session
- 12:15-12:45 Q&A session and conclusions

12 OCTOBER 2022

**INESC TEC
Industry and
Innovation lab**

Porto, Portugal



Plenary session

Our speakers



Diego Perez Lozada, AIMEN, Project coordinator
Team Leader – Advanced Robotic Technologies & Applications
Title of the presentation: [Mari4_YARD: User-centric tools for flexible manufacturing](#)



Andrea Parri, IUVO
R&D Biomedical Engineer
Title of the presentation: [Exoskeletons assisting workers](#)



Jonatan Moya, GHENOVA
Naval Architect and Marine Engineer
Title of the presentation: [Inspection of difficult access areas with UAVs](#)



Luis Rocha, INESC TEC
Senior Researcher
Title of the presentation: [Mobile Manipulator for logistic Operations & Augmented Reality as a Support Tool](#)



Isidro Fernandez, AIMEN
Robotic Engineer
Title of the presentation: [Collaborative robots for welding](#)



Hands-on session



“ Exoskeletons

for shoulder and trunk support are essential for the competitiveness of small and medium-scale shipyards.

Lowering physical strain, assistive exoskeletons are expected not only to improve safety and ergonomics of the working condition but also to impact quality and productivity enhancing precision and avoiding fatigue-induced errors”.

Andrea Parri, IUVO



“ Drones are a new and fast expanding technology in shipyards, allowing the inspection of areas hardly accessible. Genova, as the company responsible for the aerial surveillance tools, has analyzed and developed solutions for the needs of the partner shipyards in Mari4_YARD”.

Jonatan Moya, GHENOVA



Hands-on session

“ Collaborative mobile manipulators

assist operators in carrying out logistics tasks. A system for AI-based object perception and grasping and navigation tools allow autonomous operation of the mobile platform. A projection-based AR tool with a 3D perception helps the user marking, cutting, and welding metal structures”.

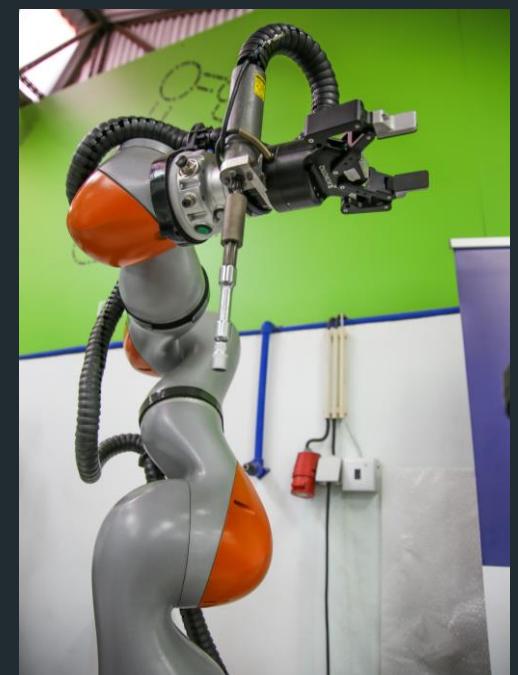
Luis Rocha and Carlos Costa, INESC TEC



“ Collaborative robots (Cobots)

allow operators and robots to work together in perfect harmony, without the need for safety fencing and expensive guarding. The main objective is the deployment of cobots inside blocks and confined spaces in shipbuilding. Here, we show our cobot with its own hardware solution and a combination of robot equipment, perception system and welding machine”.

Isidro Fernandez, AIMEN



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