



ERF 2017 Workshop on European robotics competitions and challenges: status quo and lessons learned

Team's experience in EuRoC Challenge 1 - Reconfigurable Interactive Manufacturing Cell

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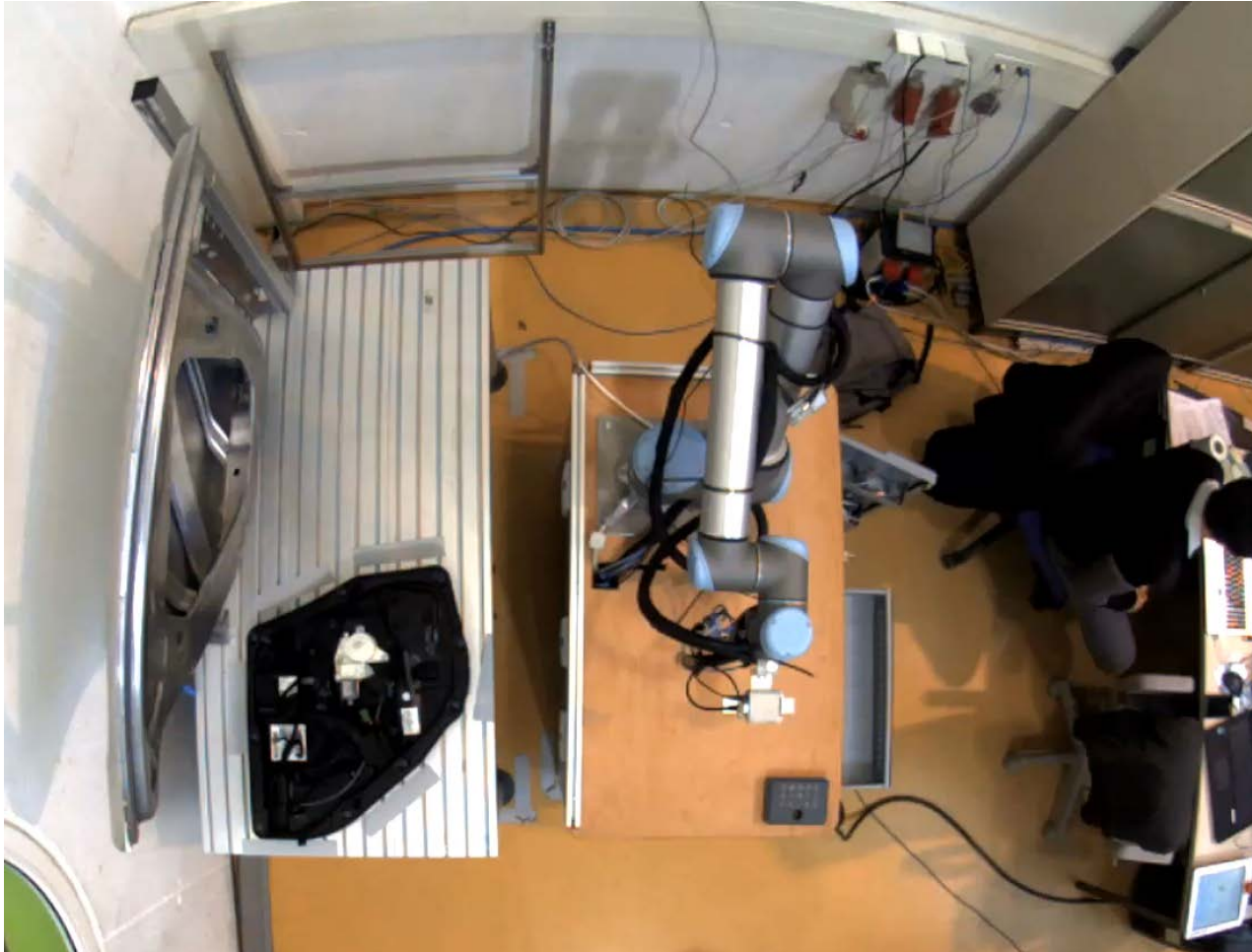
Istituto di Tecnologie Industriali e Automazione
Consiglio Nazionale delle Ricerche

- Research: National Council of Research of Italy, Institute of Industrial Automation (CNR-ITIA)
- Research: IK4-Tekniker (IK4-Tekniker)
- System Integrator: Telerobot Labs S.r.l. (TLABS)
- End User: Machining Centers Manufacturing S.p.A. (MCM)

- Benchmarking
- Freestyle
- Showcase

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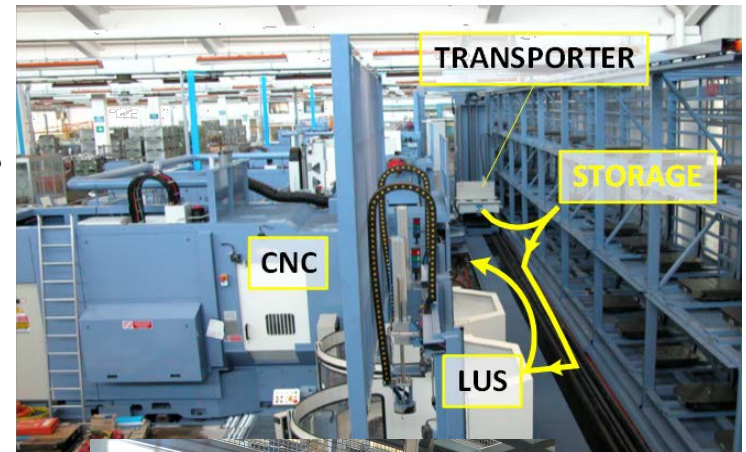
Assembly of a car door: vision, control



- Benchmarking
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The Euroc Project – PIROS TEAM

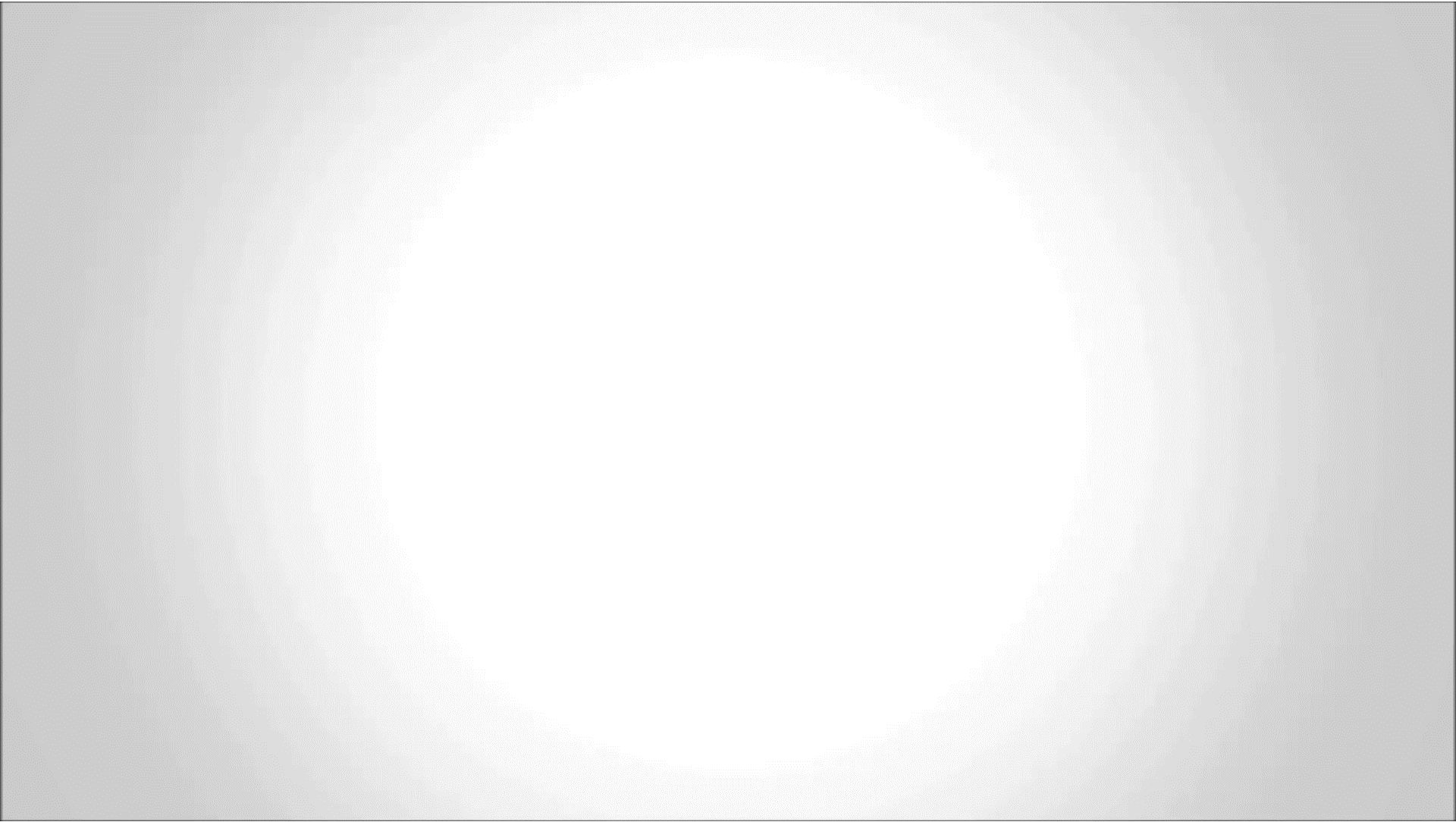
- Deploy human-robot cooperative technologies where robot collaboration is reckoned as a key competitive factor by the end user
- High-skill preparation of complex pallets before/after machining in flexible manufacturing systems (FMS)
- Critical for any CNC operation
- Only manual task left in highly automated FMSs.
- Hundreds of configurations, continuously changed for the production of small batches
- Mounting errors may generate substantial production losses.



The Euroc Project – PIROS TEAM



Set of tasks covering vision, gesture recognition, human-aware motion planning, impedance control, task planning



- Benchmarking
- Freestyle
- Showcase

Mouting and unmounting of parts through robot fast programming



What did we learn?

- ROS and ROS Industrial
- Technical knowledge in Vision, Control, Gesture recognition, Motion planning in HRC, Task planning
- Replicate the same demos in different environments

Plus

- Competition
- Available hardware
- Team work
- Testing our abilities in a unknown context
- For benchmarking: possibility to be part in a competition in which abilities are objectively measured and are equal for all the participants

Minus

- Lack of common criteria for team evaluations in freestyle and showcase
- Really demanding competition in terms of person months and efforts

Presenter

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Thanks for your attention!

Questions?



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