



Human-robot seamless interaction for efficient collaboration

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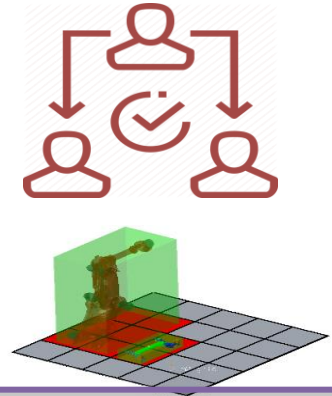


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Design...

- ✓ How to design & plan HRC workplaces ??
- ✓ How to design an efficient HRC layout ??

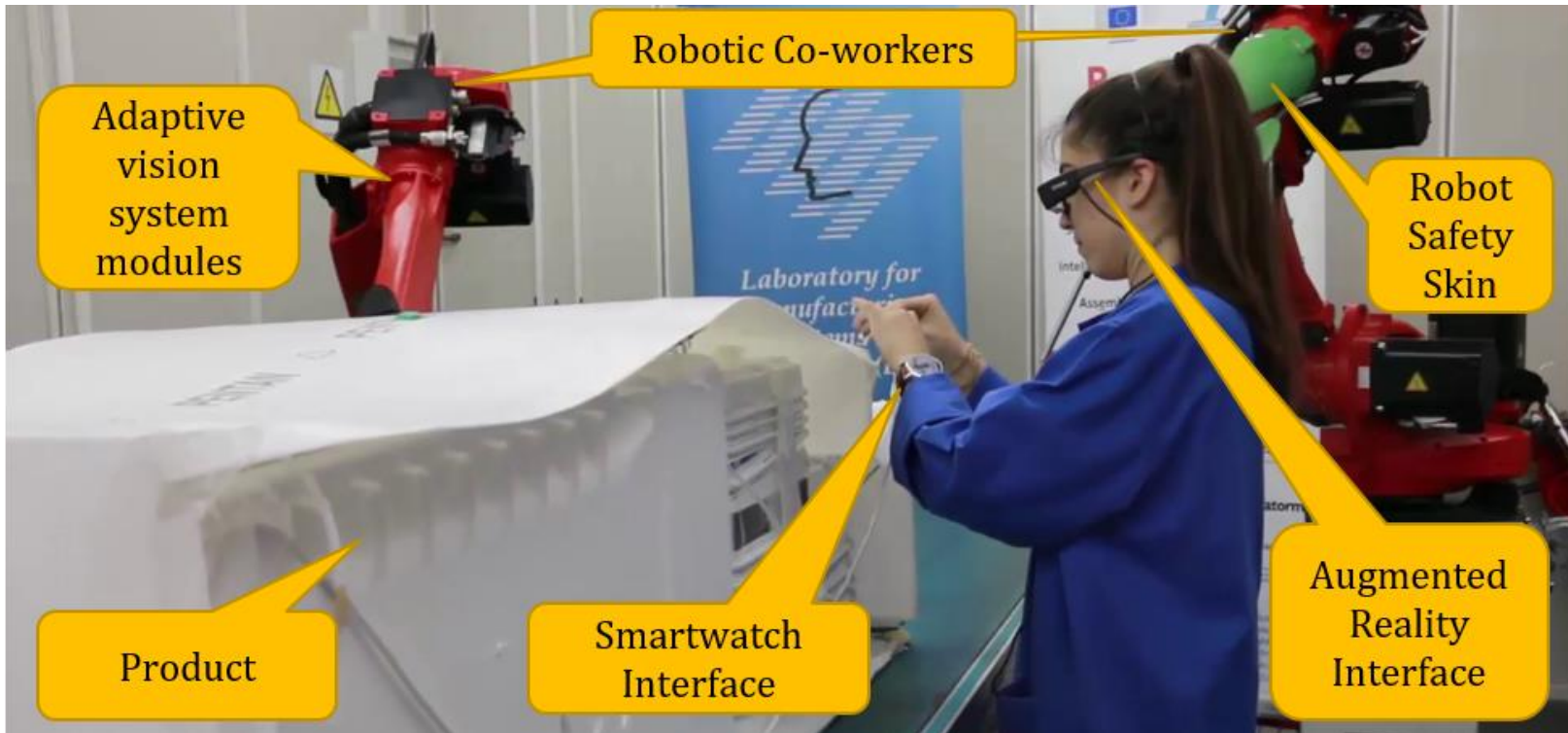


Physical Implementation - Execution...

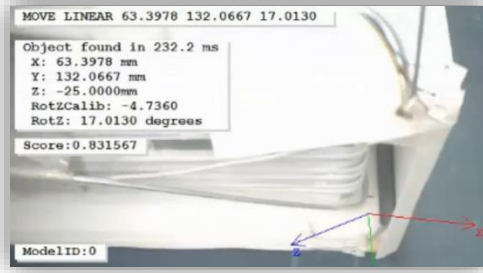
- ✓ How to ensure safety ??
- ✓ How to support humans & enable interaction ??
- ✓ How to monitor & coordinate execution??



White goods case



Sensor guided robot motion



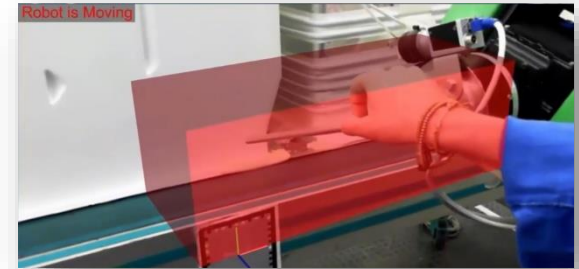
- ✓ Model tracking
- ✓ Sealing Path calculation

Safety Skin



- Functionality: Collision detection

AR & Interference Regions



- ✓ Interference regions visualization
- ✓ Visual / Audio alerts
- ✓ Production info



- ✓ Operator communication

- Integrate task planning & scheduling to real time execution so to achieve **dynamic re-organization of work** in dynamic changing environments
- Develop methods for **better immersing the human** in the new safe measures that are becoming available.
- **Integrate the safety induced restrictions inside design and planning** tools that can simulate their effect on the manufacturing process.
- **Reduce the complexity of deployment.** Each safety function requires different systems to implement – error free operation may be at risk
- Robot makers provide different implementations of the same functionality. **Standardization required for robustness**
- **Tooling redesign.** Several aspects of converting existing tools used by robots to safe tools

Thank you for your Attention!

Questions?

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Acknowledgements



<http://robo-partner.eu/>



<http://www.sherlock-project.eu/>