Workshop on World Perception for Autonomous Applications in Agile Manufacturing

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Agenda

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10:45	Introduction by the moderators/definition of key questions
10:55	Presentations:
	Use cases in perception for Agile Manufacturing,
	Dr. Maximo Roa, Roboception GmbH, Germany
	Vision techniques for robots in industrial and home environments,
	Prof. Markus Vincze, Technical University of Vienna, Austria
	Intelligent, flexible and safe operations in future factories,
	Ander Iriondo, IK4-Tekniker, Spain
	Perception challenges in e-commerce,
	Dr. Graham Deacon, Ocado Technologies, UK
	InFuse, Perception for Space Applications,
	Dr. Jeremi Gancet, SAS, Belgium
12:05	Interactive session/round table discussion of the key questions with all speakers and the audience
12:20	Conclusion for roadmapping and take home message
12:30	End of workshop

Link to the website: http://roboception.com/erf2019

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Sense. Reason. Act.

- Perception and manipulation systems must be tightly coupled
- Flexible production
- Real-time requirements
- Users need intuitive and integratable robotic solutions
- Ready-to-use and easy-to-use functionality

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Agile Manufacturing

Perception is one of the key technologies for flexible production

- In flexible and agile production, robots must be able to reliably detect and locate work pieces and human collaborators.
- In logistics, manual work is still pre-dominant due to the complexity of tasks and the variation of objects.
- Individual engineering of solutions is costly and does not scale

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Agile Manufacturing

Requires a fast adaptation of a system to new environments

- Avoid approaches that require an extensive re-training of the system in changing environments
- Combination of learning and model based approaches show great potential
- Separation of the perception part from the general task description
- Low level perception modules or front-layers in the learning approaches.
- Business models for open source software and commercial platforms including data models

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Key questions

1. What perception tools, toolboxes and approaches (learning, model-based) are currently used in industrial automation and logistics, and what are their advantages/shortcomings?
2. Which are major challenges and potential step changes i.e., what is required from the tools/platforms, in order to increase flexibility in production?
3. Which business models in terms of data/software tools/platforms do you see and how do open source tools and commercial tools adapt to these models?

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Statements

- It is necessary to deal with with dynamics/motion in the scene
- Workflow monitoring system, object centric approach, visual learning system
- New task representations going away from metric representations
- Extension of data bases with action labels – check in autonomous driving community
- Using flow information in mobile applications to support navigation

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Perception Group

Closing

Workshop Slides:

http://roboception.com/erf2019

Interest in Participating in TG Perception:

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