Open-Digital Industrial and networking pilot lines
using modular components for scalable production

12 December 2022

PRESS RELEASE: ODIN launches its preliminary industrial pilot setups

Big news for ODIN towards the **initial validation of developed modules**. Following the identification of the requirements and specifications but also the development of the prototype modules during the first phase of the project, ODIN continues by focusing on modules' deployment and validation within the three use cases of the project. ODIN use cases come from three different industrial sectors namely the **Automotive**, the **Aeronautics** and the **White Goods** including different robot resources in terms of mobility and payload strength. Each use case targets a specific industrial pilot line with its own set of performance requirements, needs and assembly operations.

Automotive Pilot Line

The implementation of the automotive pilot line is focusing on a flexible and fenceless robotic system that promotes reconfigurability and collaboration with human operators under **the assembly process of a vehicle car engine**. The first ODIN technologies that are currently tested include:

- **Mobile manipulators for screwing in motion**: The introduction of autonomous mobile manipulators that can operate in an **autonomous and collaborative way** brings new opportunities in the automotive industry. Operations that are currently being handled manually such as screwing are now executed in motion through the ODIN mobile manipulators taking advantage of **visual servoing** techniques, including **PID control** and **custom controllers.**

Screwing while moving

- **Robotic perception for AI-based quality inspection**: Utilization of robust **Deep Learning Models** already took place in order to facilitate operations requiring **perception of the process**. Inspection of the automotive parts can now be successfully achieved through visual sensors and **vision systems** automatically and robustly, **keeping operator in the loop** for added-value tasks.

Quality inspection of engine parts

This project has received funding from the European Union's Horizon 2020 research and Innovation Programme under Grant Agreement No. 101017141

Aeronautics Pilot Line

The Aeronautics pilot line focuses on the automation of the tasks related to the **assembly of Aeronautics Fan-cowls**. The initial validation of ODIN technologies has taken place with some quite interesting results:

- **Autonomous transportation of large aerospace parts**: Currently, in aeronautics industry, the operation of transportation/handling of aerospace fan cowls is being done manually by operators. The introduction of ODIN **autonomous mobile manipulators** and **3D navigation techniques** already shows promising results in automating this challenging operation.

Transportation of large aerospace parts

- **Onsite Interactive Skill Programming:** First results demonstrated that the operator can easily manage robotic applications in the aeronautics industry based on **different robot skills**. Complex operations such as precise movements, agile pose recording, big parts manipulation can easily be configured by the operator via **interactive user interface**.

Onsite Interactive Skill Programming

White Goods Pilot Line

Through this pilot, ODIN focuses on making customization easier and improving the existing robot solution by managing the **assembly of oven and cooktop burners**. We are thrilled to present the first quite interesting results under the initial LMS installation:

- **Reconfigurable Robot Tooling**: Introduction of different tools that can easily be configured are already proven of high benefit since different white good parts can be manipulated under the same workstation. The use of **magnetic and flexible and vacuum grippers** that can **change on the fly** through tool exchange **ROS-based techniques** has been evaluated with success.

Manipulation of white goods parts

- **Augmented Reality for operator support**: Interactive AR interfaces have been already deployed in order to support the operator. Different functionalities have been already tested such as the **provision of assembly information**, **visualization of robot trajectory, easy robot programming.**

AR operator support application

Contact us

Project Coordinator
Dr. Sotiris Makris
Laboratory for Manufacturing Systems and Automation (LMS),
University of Patras
Tel: +30-2610-910160
Fax: + +30-2610-997314
e-Mail: makris@lms.mech.upatras.gr

More information on the ODIN project can be found at www.odin-h2020.eu.
For additional questions please contact info@odinh2020.eu

This project has received funding from the European Union's Horizon 2020 research and Innovation Programme under Grant Agreement No. 101017141