INLEARC project enters to its final third

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Regardless of the challenging times due to COVID-19, Erasmus+ funded project Intelligent E-learning Systems in Robotics/Mechatronics has reached its final third from the results and schedule perspective. Recently project partners from Estonia, Finland, and Latvia have been developing the strategy and methodology for the digital teaching process development and also multiple use cases of robotics.

Use cases are Moodle courses, based on the topics derived from the project's early-stage analysis of the various robot cells from the industry and the needed competencies. Each country is developing at least four use cases that will be available in the Digital learning platform of the project before the project ends. Following use cases will or has been developed during the project:

- Robot-bending workplace and its components
- Industrial robot functionality and coordinate systems
- Implementation of offline programming in a robot welding cell
- Assembly tasks with a collaborative robot using force sensing
- Machine vision-based pick and place application with industrial robots
- Data acquisition from a robot cell and visualization of the data applying cloud-based services
- Industrial robot maintenance for metal processing operations
- Robot cell design and simulation for manufacturing
- Safety devices for industrial robots in production operations
- Industrial robot smart end effectors for CNC machines
- Bending cycle description
- Press brake machine and technical capabilities
- Robot bending technology
- Robot bending process optimization
- Robot end-of-arm tooling

Use cases are similarly structured and developed learning paths, so after the project, each partner and stakeholders can implement them in their environments. Use cases consist of, for example, theoretical part, assessment activities, branching based on the assessment, and applying part, which is typically based on some real-world application. After finalizing the Use case, the student masters one of the topics' theoretical background and implementation of the applying part, therefore gaining important industry-based competencies from the domain of robotics.

The project's next step is to gather feedback from the industry and students as well regarding the use cases. Another upcoming activity of the project is to study and implement possibilities of artificial intelligence in the digital teaching process. This would also be one of the hot topics in the project meeting in Helsinki at the end of September when all project partners are finally meeting face to face after 1,5 years of online meetings.

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