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Collaborative robotics in Industry 5.0: impacts and future perspectives

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Nuovo Viale Margherita, Sala 8, Viale Margherita 87, Vicenza

Seminar open to DTG students and carried out within the framework of the project 'Integration of human and productive factors in collaborative and automatic systems'

Biography

Prof. Ing. Emmanuel Francalanza is a member of the Department of Industrial and Manufacturing Engineering and carries out research in the field of digital manufacturing. His research is mainly focused on developing methods and tools to support industry in implementing "Industry 4.0" and "Industry 5.0" technologies. This research work involves the design and implementation of digital technologies, including Collaborative Robotics, Industrial Internet of Things, Digital Twins and Artificial Intelligence within industrial automation systems, transforming traditional manufacturing machines into cyber physical systems. Prof Ing. Francalanza is also an associate editor of the Journal of Production & Manufacturing Research. Before joining the University of Malta, he was employed by Methode Electronics Malta Ltd, an automotive switchgear OEM based in Malta, where he worked in the fields of both design and manufacturing. Prof Ing. Emmanuel Francalanza graduated with Honours in Mechanical Engineering from the University of Malta in 2005 and with an MSc in Integrated Product Development in 2008, and a PhD in Engineering from the University of Malta in 2016.



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Industry 5.0 is a novel vision for modern production systems that aims beyond efficiency and productivity by placing the wellbeing of the worker at the centre of the production process. As one of the enabling technologies of Industry 5.0, collaborative robots aim to merge the capabilities of human operator and robots to improve the flexibility and performance of production systems. However, the collaboration between human and robots rises challenges in the implementation of these systems, as the direct interaction between human and robots may present safety issues, and may affect in a negative way the operator's physical fatigue and mental workload.

