FABIO PINI – SHORT CV

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Biography

Fabio Pini Fabio Pini obtained bachelor's and master's degrees in Mechanical Engineering from the University of Modena and Reggio Emilia, dealing with topics related to the development and design of products and processes. At the same University, in 2008, he obtained a Ph.D. degree in Simulation Methods and Mechanical Design with a thesis entitled "Development of an Engineering Methodology for the Integrated Design of Modular and Reconfigurable Robotic Manufacturing Cells." In the same year, he joined the Department of Mechanical and Civil Engineering (now DIEF - "Enzo Ferrari" Engineering Department) of the University of Modena and Reggio Emilia as technical personnel. He follows and carries out research activities at LaPIS "Integrated Design and Simulation Laboratory", actively contributing to the growth of the laboratory, which has now evolved into the IDEA "Integrated Design and Engineering Applications" Laboratory. From February 2022 the 1st he is a tenure track professor for the disciplinary scientific sector ING-IND/15 "Design and Methods of Industrial Engineering" at DIEF. Since November 2015, he has been directly involved in scientific research activities involving the DIEF laboratory branch, which is joined and located at SIR Spa company.

He teaches master's degree courses in Advanced Automotive Engineering and Computer Engineering, bachelor's degree courses in Vehicle Engineering and Computer Engineering at the University of Modena and Reggio Emilia, and an Inter-University bachelor's degree in Human Centered Medical System Engineering.

He is the author of international scientific publications in scientific journals and international conferences - https://orcid.org/0000-0001-9263-426X.

Since 2010, he has participated in research projects (COMET and SYMPLEXITY), and in 2023, he is the scientific coordinator of the CoboSort project - a competitive (peer-reviewed) European project. Scientific manager of research contracts and technical consultancy for SMEs and industries.

Since 2017, he has been co-founder of IDEATIVA SrL – University SpinOff of UNIMORE until 2023 – which offers innovative products and services for companies in the automotive (automation and robotics) and biomedical sectors - www.ideativa.it.

Research activity

The research activity focuses on defining integrated design methodologies for developing industrial and collaborative robotics solutions using computer-based tools for simulation, behavioural analysis, and process optimization.

• Design of robotic solutions for executing mechanical processes, such as robotic machining and polishing and assembly, such as gluing and welding. Definition of methodologies for the analysis and improvement of the quality and efficiency of processes. About welding, integration of programming, and thermo-mechanical analysis of welded joints for the design and optimization of robotic welding processes in automotive applications.

• Evaluation of ergonomics and risk levels for the efficient design of collaborative robotics applications by integrating virtual mannequins and simulation of human-robot interaction operations.

• Integration of artificial intelligence models and numerical simulation to identify picking strategies required for manipulating deformable components using industrial/collaborative robots.

• Process and product simulation for the definition, analysis, optimization, and programming of Robotic Additive Manufacturing solutions.

• Analysis of robot-human interaction during upper limb rehabilitation activities, and development of methodologies for optimal design of collaborative solutions to support therapies for mobility recovery