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José Machado concluded Habilitation Title in February 2019 at University of Minho, Portugal. He received his PhD degree in Mechanical Engineering – Automation, from University of Minho, Portugal and, in simultaneous, from Ecole Normale Superieure de Cachan, France, in 2006. He is Deputy Director of MEtRICs Research Center and Associate Professor w/ Habilitation at Mechanical Engineering Department of University of Minho. He has authored, or co-authored, more than 250 refereed journal and conference proceedings papers. He coordinates and has coordinated - and participated as collaborator - in several Research and Technology Transfer Projects on Mechatronics and Automation domains. His main interests are related with Industry 4.0, more specifically, on the design and development of Cyber-Physical Systems; design and analysis of dependable controllers for obtaining dependable mechatronic systems; and mechatronic systems design with special focus on manufacturing industry and medical or biomedical applications, wellbeing and/or rehabilitation. He is member of Scientific Communities IEEE, IFAC and IFToMM. ORCID ID: 0000-0002-4917-2474

Keynote:

Title:

A Novel Paradigm for Mechatronic Systems Design

Abstract

A modern perspective on the design of mechatronic systems is grounded in the revised VDI/VDE 2206:2021 guideline, which updates earlier practices to better address today's cyber-physical and strongly interconnected environments. In contrast to previous versions, that concentrated primarily on cross-disciplinary conceptual design, the 2021 update introduces an enriched V-model structure specifically adapted for both mechatronic and cyber-physical system development, supporting the process from requirements definition through validation and system integration in a coherent and structured manner. This revised approach highlights the importance of interdisciplinary cooperation and encourages a flexible interpretation of the V-model depending on the context of each project, rather than enforcing fixed tools or rigid workflows. Instead, it offers a conceptual backbone that enables engineers to shape tailored design methodologies suited to practical applications, promoting consistency across mechanical, electrical, and software domains without imposing a predefined organizational scheme.