Presentation Topic
Cyborg 2025: Bionic Limbs, Exoskeletons, and Human-Machine Integration

Abstract
This talk highlights recent progress in bio-mechatronics, focusing on powered bionic prostheses, neural interfaces, and robotic exoskeletons. We discuss how advances in actuation, sensing, and neuromuscular modeling enable prosthetic limbs to restore near-natural gait and function. Surgical and implantable neural interface techniques, such as the Agonist–Antagonist Myoneural Interface (AMI) and osseointegration, further enhance control and embodiment. Finally, we examine the role of exoskeletons in rehabilitation and mobility augmentation. Together, these developments illustrate the emerging paradigm of seamless human–machine integration.