

Pro<sup>2</sup>Future 4<sup>th</sup> Scientific Symposium on  
**COGNITIVE AND SUSTAINABLE  
PRODUCTS AND PRODUCTION SYSTEMS**  
of the Future

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**Physical AI:  
Bringing Real-Time Intelligence to the  
Physical World**

**ABSTRACT**

The growing demand for real-time, autonomous, and privacy-preserving systems is driving a paradigm shift from cloud-centric AI to intelligence directly embedded at the edge. This keynote explores how Edge AI enables immediate data processing and decision-making on resource-constrained devices, such as wearables, smart sensors, and autonomous robots.

He will discuss the key challenges of deploying AI on constrained hardware, including limited energy budgets, memory, and computational resources, and present emerging solutions based on hardware–software co-design, efficient machine learning models, and event-driven sensing. Through examples from wearable systems, to robotics, the talk highlights how real-time intelligence at the edge unlocks new applications.

**SHORT BIO**

Michele Magno (Fellow Member, IEEE) is Head of the Project-Based Learning Center at ETH Zurich, where he also leads the Edge AI and Sensing Lab at ETH. He is also a Fellow Professor at IT:U – Interdisciplinary Transformation University Austria (Linz), where he contributes to the development of new academic initiatives within the Smart Space Sensing and Systems Lab (S<sup>3</sup> Lab).

His main research interests include wireless sensor networks, wearable systems, edge machine learning, smart sensing, autonomous robots, energy harvesting, low-power design techniques, and efficient processing for battery-operated devices.

He has collaborated with several leading universities and research centers worldwide and has established strong industry partnerships, including collaborations with IBM Research, Sony (recipient of the Sony Faculty Award), STMicroelectronics, Infineon, Ferrari, EssilorLuxottica, and others.

He has authored more than 400 publications in international journals and conferences and has received multiple Best Paper and Best Poster awards.