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Workshop

"Robots Building Robots"

Digital Manufacturing and Human-centered Automation for Building Consumer Robots

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Title of presentation:

Robot Aided Design: using robots to design robots

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Abstract:

Advanced computational tools (e.g. CAD, FEM, VR, etc.) are today ubiquitously adopted to design machines, robots and more. Capabilities are impressive, as recently demonstrated by AI platforms able to evolve the behaviour of a 3D bipedal virtual agent towards effective locomotion. This is made possible by unprecedented computation power, eight orders of magnitude larger than what was available 50 years ago, that is transforming engineering, science and technology.

A simple reality check however shows that there is a striking mismatch between simulated and real-world operation of engineered systems, with particular reference to robotics.

In the talk Prof. Stefanini will elaborate on this discrepancy and on the need of re-discovering the importance of a deep intellectual approach in the design phase as well as on the use of robots during the design itself.

Two main case studies will be presented, representative of two paradigmatic scenarios: multi-coupled systems and bio-hybrid systems.

The aim of the talk, far from being dogmatic or definitive, is to start a discussion on the use of robots at design stage and to be provocative against some current trends in the extensive use of computational tools in all design steps, including those early ones where creativity and intellectual representation play a vital role.